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CITY AND COUNTY OF SAN FRANCISCO

A PREDESIGN REPORT ON

# MARINE WASTE DISPOSAL

## VOLUME V – DATA SUPPLEMENT

## 1973-1974 INVESTIGATIONS AND PRELIMINARY DESIGN

OCTOBER, 1975

BROWN AND CALDWELL
CONSULTING ENGINEERS

WALNUT CREEK, CA

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# APPENDIX H

## Physical Oceanography. Gulf of the Farallones, October 1973

- Weather and Sea Observations
- Current Measurements
- Physical-Chemical Profiles

# Weather and Sea Observations

## Table H-1. Weather and Sea Observations, October 2-4, 1973

| Station | Date | Time | Visibility (miles) | Weather (symbols) | Temperature (degrees) |  | Clouds |  | Sea waves |  | Swell waves |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  | Dry bulb | Wet bulb | Amount (tenths) | Type | Direction (true) | Height, feet | Direction (true) | Height, feet |
| 1 | 10/2/73 | 0900 | 8 | Ovc | 54 | 52 | 10 | Cu | 280 | 3 | 280 | 5 |
|  |  | 1000 | 8 | Ovc | 55 | 52 | 9 | Cu | 270 | 3 | 270 | 5 |
|  |  | 1100 | 8 | Bkn | 56 | 53 | 9 | Cu | 260 | 3-4 | 260 | 5-6 |
|  |  | 1200 | 8-12 | Bkn, H | 57 | 54 | 3 | Cu | 270 | 4 | 270 | T |
|  |  | 1300 | 12 | Cir, H | 58 | 54 | 0 | H | 270 | 4 | 270 | T |
|  |  | 1400 | 12 | Cir, H | 60 | 54 | 0 | H | 280 | 4 | 280 | T |
|  |  | 1500 | 12 | Cir, H | 60 | 56 | 0 | H | 280 | 4 | 280 | 1-2 |
|  |  | 1600 | 9-12 | Cir, H | 61 | 57 | 0 | H | 275 | 2 | 275 | 1-2 |
|  |  | 1700 | 12 | Cir, H | 60 | 57 | 0 | H | 290 | 2 | 290 | 1-2 |
|  |  | 1800 | 12 | Cir, H | 60 | 58 | 0 | H | 265 | 1 | 265 | 3 |
|  |  | 1900 | 11-12 | Cir, H | 58 | 56 | 0 | H | 280 | 1-2 | 280 | 2-3 |
|  |  | 2000 | 10-11 | Cir, H | 54 | 54 | 0 | SH | 250 |  | 250 | 3 |
|  |  | 2100 | 10 | -- | 54 | 52 | 0 | -- | 225 |  | 225 | 3-4 |
|  |  | 2200 | 10 | -- | 55 | 52 | 0 | -- | 260 |  | 260 | 3-4 |
|  |  | 2300 | 12 | Cir | 55 | 52 | 0 | -- | 270 |  | 270 | 3-4 |
|  |  | 2400 | 12 | Cir | 54 | 52 | 0 | -- | 230 |  | 230 | 3-4 |
|  | 10/3/73 | 0100 | 12 | Cir, H | 56 | 54 | 0 | -- | 260 | 3 | 260 | T |
|  |  | 0200 | 12 | Cir, H | 56 | 54 | 0 | -- | 260 | 1 | 260 | 3 |
|  |  | 0300 | 12 | Cir | 54 | 53 | 0 | -- | 260 | - | 260 | 4 |
|  |  | 0400 | 12 | Cir | 56 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0500 | 12 | Cir | 56 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0600 | 12 | Cir | 56 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0700 | 9 | Cir | 56 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0800 | 6 | H, Sct | 56 | 54 | 1 | Ci | -- | - | 270 | 3 |
|  |  | 0900 | 7 | H, Sct | 58 | 55 | 2 | Ci | 250 | 2 | 270 | 4-5 |
|  |  | 1000 | 7 | H, Bkn | 60 | 56 | 6 | Cu, Ci | 260 | 2 | 270 | 4 |
|  |  | 1100 | 7 | H, Bkn | 60 | 58 | 7 | Ci | -- | - | -- | - |
| 2 |  | 1200 | 7 | H | 64 | 59 | 2 | Ci | -- | - | 270 | 3 |
|  |  | 1300 | 8 | H, Cir | 64 | 60 | 0 | -- | 290 | - | 290 | 3 |
|  |  | 1400 | 1/2 | F | 64 | 60 | - | -- | -- | - | 290 | 4 |
|  |  | 1500 | 5-8 | Cir, H | 64 | 60 | H | -- | 290 | - | 290 | <1 |
|  |  | 1600 | 20 | H | 64 | 60 | - | -- | 290 | - | 290 | 3 |
|  |  | 1700 | 13 | Cir, H | 64 | 60 | H | -- | 290 | - | 290 | 3 |
|  |  | 1800 | 13 | Cir, H | 62 | 58 | H | -- | 290 | - | 290 | 3 |
|  |  | 1900 | 15 | Cir, H | 58 | 56 | H | -- | 290 | - | 290 | 3 |
|  |  | 2000 | 12 | Cir, H | 56 | 54 | H | -- | 290 | - | 290 | 2 |
|  |  | 2100 | 12 | Cir | 55 | 54 | - | -- | -- | - | 260 | 4 |
|  |  | 2200 | 15 | Cir | 55 | 54 | - | -- | -- | - | 260 | 4 |
|  |  | 2300 | 15 | Cir | 54 | 53 | - | -- | -- | - | 270 | 3 |
|  |  | 2400 | 15 | Cir | 54 | 53 | - | -- | -- | - | 250 | 3-4 |
|  | 10/4/73 | 0100 | 12 | Cir | 54 | 53 | 0 | -- | 290 | T | 290 | 3 |
|  |  | 0200 | 12 | Cir | 54 | 53 | 0 | -- | 290 | T | 290 | 2 |
|  |  | 0300 | 12 | Cir | 54 | 53 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0400 | 12 | Cir | 54 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0500 | 12 | Cir | 54 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0600 | 12 | Cir | 56 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0700 | 12 | Cir, F | 56 | 54 | 0 | -- | 260 | - | 260 | 2 |
|  |  | 0800 | 1-3 | Cir, F | 58 | 56 | 0 | -- | 250 | - | 250 | 3 |
|  |  | 0900 |  |  | 60 | 57 |  |  |  |  |  |  |
|  |  | 1000 | 12 | H | 62 | 58 | 0 |  | 270 | 1 | 270 | 3 |
|  |  | 1100 | 1 | F | 60 | 57 |  |  | 270 | 2 | 270 | 3 |
|  |  | 1200 | 3 | F | 62 | 58 | 0 |  |  | 1 | 270 | 3 |
|  |  | 1300 | 6 | Cir, H | 66 | 61 | 0 | -- | 290 | 1 | 290 | 3 |
|  |  | 1400 | 9 | Bkn, H, F | 58 | 56 | 6 | Cu | 270 | 1-2 | 270 | 3 |
|  |  | 1500 | 10 | Cir | 62 | 58 | 0 |  | N | 1 | -- | - |

## Table H-2. Wind Measurements, October 2-4, 1973

| Station | Date | Time[a] | Speed, kt | Direction relative to gyro, °T | Gyro, °T | Direction from °T | Direction toward, °T |
|---|---|---|---|---|---|---|---|
| 1 | 10/2/73 | 0910 | 11 | 315 | 305 | 260 | 080 |
| | | 1050 | 9 | 275 | 340 | 255 | 075 |
| | | 1150 | 5.5 | 225 | 350 | 215 | 035 |
| | | 1250 | 10 | 215 | 321 | 176 | 355 |
| | | 1350 | 9 | 020 | 207 | 227 | 045 |
| | | 1450 | 9 | 050 | 223 | 273 | 095 |
| | | 1550 | 6 | 080 | 220 | 300 | 120 |
| | | 1650 | 4 | 045 | 245 | 290 | 110 |
| | | 1755 | 10 | 000 | 280 | 280 | 100 |
| | | 1855 | 7.5 | 315 | 296 | 251 | 070 |
| | | 1954 | 7.5 | 315 | 294 | 249 | 070 |
| | | 2056 | 6 | 255 | 324 | 219 | 040 |
| | | 2150 | 6 | 240 | 349 | 229 | 050 |
| | | 2250 | 7 | 245 | 333 | 218 | 040 |
| | | 2350 | 6.5 | 300 | 250 | 190 | 010 |
| | 10/3/73 | 0050 | 7.5 | 050 | 192 | 242 | 060 |
| | | 0150 | 3 | 050 | 194 | 244 | 065 |
| | | 0250 | 3 | 360 | 196 | 196 | 015 |
| | | 0355 | 3 | 345 | 270 | 255 | 075 |
| | | 0455 | 7 | 330 | 201 | 171 | 350 |
| | | 0555 | 5 | 000 | 193 | 193 | 015 |
| | | 0655 | 6 | 345 | 186 | 160 | 020 |
| | | 0755 | 6.5 | 340 | 179 | 159 | 340 |
| | | 0900 | 5 | 000 | 181 | 181 | 000 |
| | | 0953 | 7 | 035 | 203 | 238 | 058 |
| | | 1050 | 5 | 050 | 242 | 292 | 110 |
| | | 1150 | 4 | 035 | 239 | 274 | 095 |
| 2 | | 1250 | 6 | 075 | 275 | 350 | 170 |
| | | 1350 | 9 | 045 | 255 | 300 | 120 |
| | | 1450 | 6 | 075 | 275 | 350 | 170 |
| | | 1600 | 6 | 030 | 276 | 306 | 125 |
| | | 1700 | 6 | 015 | 280 | 295 | 115 |
| | | 1755 | 11 | 000 | 317 | 317 | 135 |
| | | 1855 | 8 | 315 | 338 | 293 | 115 |
| | | 1959 | 2 | 255 | 355 | 250 | 070 |
| | | 2100 | 6 | 250 | 005 | 255 | 075 |
| | | 2150 | 5.5 | 240 | 28 | 268 | 090 |
| | | 2250 | 7 | 210 | 035 | 245 | 065 |
| | | 2350 | 6.5 | 215 | 063 | 278 | 100 |
| | 10/4/75 | 0055 | 6 | 190 | 110 | 300 | 120 |
| | | 0150 | 3 | 130 | 136 | 266 | 085 |
| | | 0250 | 3 | 150 | 160 | 310 | 130 |
| | | 0350 | 3 | 115 | 190 | 305 | 125 |
| | | 0450 | 4 | 040 | 199 | 239 | 060 |
| | | 0600 | 3.5 | 315 | 207 | 162 | 340 |
| | | 0700 | 2.5 | 020 | 203 | 223 | 045 |
| | | 0800 | 3 | 190 | 207 | 037 | 115 |
| | | 0900 | 3 | 105 | 244 | 349 | 170 |
| | | 1000 | 12 | 036 | 280 | 316 | 135 |
| | | 1100 | 10 | 000 | 304 | 304 | 125 |
| | | 1200 | 7.5 | 070 | 300 | 010 | 190 |
| | | 1300 | 6 | 040 | 311 | 351 | 170 |

[a] Pacific Daylight Savings Time

# Current Measurements

## Table H-3. Current Velocities and Directions, Station 1, October 2-3, 1973

| Time (PDT) | 0930 | | 1000 | | 1110 | | 1200 | | 1300 | | 1400 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.45 | 180 | 0.35 | 175 | 0.67 | 205 | 0.45 | 205 | 0.20 | 230 | 0.22 | 330 |
| 6 | 0.50 | 195 | 0.30 | 170 | 0.70 | 205 | 0.42 | 220 | 0.20 | 250 | 0.35 | 335 |
| 10 | 0.43 | 205 | 0.28 | 170 | 0.63 | 205 | 0.40 | 225 | 0.20 | 345 | 0.30 | 325 |
| 15 | 0.41 | 190 | 0.30 | 165 | 0.47 | 220 | 0.22 | 255 | 0.30 | 340 | 0.37 | 345 |
| 20 | 0.35 | 200 | 0.37 | 175 | 0.33 | 215 | 0.17 | 280 | 0.32 | 335 | 0.28 | 010 |
| 30 | <.10 | 100 | 0.19 | 230 | 0.07 | 005 | 0.19 | 360 | 0.22 | 360 | 0.20 | 025 |
| 40 | 0 | - | 0.17 | 010 | 0.31 | 015 | 0.33 | 035 | 0.25 | 025 | 0.28 | 040 |
| 50 | <.10 | 125 | a | a | 0.30 | 035 | 0.32 | 045 | 0.25 | 025 | 0.24 | 050 |
| 60 | 0 | - | 0.34 | 035 | 0.27 | 025 | 0.32 | 035 | 0.25 | 025 | 0.12 | 040 |

| Time (PDT) | 1500 | | 1600 | | 1700 | | 1803 | | 1904 | | 2003 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.30 | 320 | 0.25 | 305 | 0.10 | 320 | 0.20 | 005 | 0.35 | 160 | 0.10 | 125 |
| 6 | 0.30 | 345 | 0.27 | 320 | 0.10 | 310 | 0.22 | 005 | 0.32 | 135 | 0.20 | 140 |
| 10 | 0.28 | 320 | 0.28 | 335 | 0.07 | 235 | 0.22 | 165 | 0.12 | 145 | 0.25 | 165 |
| 15 | 0.43 | 350 | 0.15 | 360 | 0.05 | 195 | 0.15 | 165 | 0.18 | 155 | 0.37 | 180 |
| 20 | 0.28 | 360 | 0.05 | 105 | 0.20 | 195 | 0.35 | 190 | 0.31 | 180 | 0.45 | 195 |
| 30 | 0.05 | 100 | 0.05 | 105 | 0.15 | 195 | 0.21 | 190 | 0.38 | 195 | 0.40 | 195 |
| 40 | 0.05 | 100 | 0.05 | 105 | 0.12 | 185 | 0.25 | 195 | 0.55 | 205 | 0.40 | 195 |
| 50 | 0.07 | 100 | 0.05 | 125 | 0.15 | 195 | 0.40 | 195 | 0.45 | 205 | 0.25 | 215 |
| 60 | 0.08 | 095 | 0.05 | 125 | 0.22 | 185 | a | a | 0.30 | 180 | 0.08 | 190 |

| Time (PDT) | 2104 | | 2200 | | 2303 | | 2400 | | 0100 | | 0200 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.57 | 160 | 0.55 | 180 | 0.25 | 195 | 0.05 | 220 | 0.22 | 335 | 0.50 | 340 |
| 6 | 0.60 | 170 | 0.55 | 185 | 0.35 | 205 | 0.25 | 310 | 0.50 | 335 | 0.50 | 340 |
| 10 | 0.62 | 160 | 0.50 | 190 | 0.26 | 185 | 0.25 | 305 | 0.40 | 340 | 0.45 | 340 |
| 15 | a | a | 0.41 | 180 | 0.05 | 230 | 0.25 | 315 | 0.40 | 360 | 0.50 | 360 |
| 20 | 0.40 | 160 | 0.15 | 200 | 0.25 | 310 | 0.25 | 315 | 0.45 | 360 | 0.47 | 010 |
| 30 | 0.20 | 185 | 0.10 | 270 | 0.25 | 340 | 0.44 | 350 | 0.48 | 340 | 0.57 | 360 |
| 40 | 0.05 | 215 | 0.23 | 325 | 0.35 | 350 | 0.47 | 350 | 0.47 | 350 | 0.57 | 350 |
| 50 | 0.10 | 295 | 0.18 | 345 | 0.27 | 005 | 0.45 | 010 | 0.38 | 350 | 0.40 | 350 |
| 60 | 0.16 | 015 | 0.22 | 015 | 0.25 | 035 | 0.23 | 015 | 0.22 | 360 | 0.23 | 345 |

| Time (PDT) | 0300 | | 0400 | | 0500 | | 0610 | | 0705 | | 0807 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth, ft | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.44 | 345 | 0.35 | 360 | 0.27 | 340 | 0.15 | 320 | 0.17 | 280 | 0.27 | 300 |
| 6 | 0.45 | 340 | 0.40 | 360 | 0.28 | 340 | 0.18 | 315 | 0.21 | 305 | 0.15 | 300 |
| 10 | 0.42 | 355 | 0.30 | 345 | 0.27 | 350 | 0.18 | 340 | 0.20 | 295 | 0.20 | 280 |
| 15 | 0.43 | 360 | 0.35 | 005 | 0.28 | 010 | 0.18 | 360 | 0.09 | 340 | 0.05 | 160 |
| 20 | 0.47 | 005 | 0.41 | 360 | 0.47 | 015 | 0.25 | 015 | 0.15 | 030 | 0.08 | 130 |
| 30 | 0.55 | 360 | 0.60 | 360 | 0.42 | 010 | 0.20 | 025 | 0.05 | 025 | 0.08 | 140 |
| 40 | 0.60 | 350 | 0.47 | 360 | 0.40 | 360 | 0.15 | 360 | 0.05 | 320 | 0.10 | 155 |
| 50 | 0.41 | 340 | 0.30 | 340 | 0.28 | 345 | 0.05 | 345 | 0.05 | 275 | 0.08 | 165 |
| 60 | 0.25 | 320 | 0.15 | 320 | 0.17 | 360 | 0.05 | 280 | 0.05 | 360 | 0.10 | 150 |

a No Data

## Table H-3. Current Velocities and Directions, Station 1, October 2-3, 1973 (continued)

| Time (PDT) | 0909 | | 1000 | |
|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.22 | 270 | 0.30 | 305 |
| 6 | 0.20 | 255 | 0.20 | 275 |
| 10 | 0.08 | 230 | 0.08 | 240 |
| 15 | 0.10 | 160 | 0.10 | 155 |
| 20 | 0.10 | 180 | 0.12 | 140 |
| 30 | 0.20 | 160 | 0.15 | 140 |
| 40 | 0.15 | 130 | 0.05 | 125 |
| 50 | 0.15 | 155 | 0.14 | 135 |
| 60 | 0.18 | 130 | 0.20 | 120 |

## Table H-4. Current Velocities and Directions, Station 2, October 3-4, 1973

| Time (PDT) | 1206 | | 1300 | | 1400 | | 1500 | | 1600 | | 1700 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.28 | 005 | 0.32 | 010 | 0.01 | 025 | 0.06 | 105 | 0.19 | 075 | 0.07 | 110 |
| 6 | 0.45 | 350 | 0.37 | 020 | 0.06 | 025 | 0.07 | 080 | 0.09 | 125 | 0.20 | 130 |
| 10 | 0.33 | 350 | 0.34 | 025 | 0.10 | 355 | 0.13 | 035 | 0.20 | 085 | 0.38 | 140 |
| 15 | 0.38 | 340 | 0.50 | 015 | 0.20 | 005 | 0.13 | 090 | 0.03 | 080 | 0.20 | 140 |
| 20 | 0.26 | 330 | 0.19 | 010 | 0.01 | 335 | 0.07 | 115 | 0.04 | 065 | 0.06 | 180 |
| 30 | 0.02 | 340 | 0.20 | 320 | a | a | 0.22 | 330 | 0.04 | 345 | 0.08 | 255 |
| 40 | 0.05 | 225 | 0.22 | 230 | a | a | 0.27 | 275 | 0.25 | 300 | 0.20 | 290 |
| 50 | 0.08 | 240 | 0.22 | 295 | a | a | 0.22 | 330 | 0.17 | 345 | 0.08 | 320 |
| 60 | 0.08 | 285 | 0.11 | 320 | a | a | 0.06 | 310 | 0.19 | 355 | 0 | - |
| 70 | 0.05 | 300 | 0.03 | 310 | a | a | 0.15 | 360 | 0.03 | 065 | 0.08 | 050 |
| 75 | 0 | - | 0.06 | 320 | a | a | 0.22 | 015 | 0.05 | 070 | 0.04 | 065 |

| Time (PDT) | 1805 | | 1905 | | 2007 | | 2100 | | 2200 | | 2300 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.17 | 135 | 0.32 | 150 | 0.37 | 165 | 0.42 | 185 | 0.63 | 195 | 0.56 | 205 |
| 6 | 0.32 | 145 | 0.54 | 165 | 0.58 | 175 | 0.54 | 190 | 0.84 | 195 | 0.72 | 215 |
| 10 | 0.29 | 140 | 0.62 | 150 | 0.75 | 175 | 0.68 | 195 | 0.93 | 195 | 0.84 | 225 |
| 15 | 0.34 | 180 | 0.44 | 175 | 0.62 | 180 | 0.67 | 205 | 0.68 | 215 | 0.53 | 240 |
| 20 | 0.16 | 205 | 0.23 | 175 | 0.43 | 180 | 0.55 | 190 | 0.33 | 215 | 0.22 | 250 |
| 30 | 0.10 | 290 | 0.03 | 145 | 0 | - | 0.18 | 160 | 0.13 | 135 | 0 | - |
| 40 | 0.13 | 270 | 0.11 | 240 | 0.04 | 160 | 0.03 | 030 | 0.06 | 075 | 0.30 | 040 |
| 50 | 0.04 | 145 | 0.19 | 145 | 0.12 | 150 | 0.06 | 070 | 0.18 | 045 | 0.20 | 030 |
| 60 | 0.21 | 145 | 0.32 | 150 | 0.27 | 155 | 0.23 | 130 | 0.14 | 080 | 0.12 | 045 |
| 70 | 0.29 | 140 | 0.32 | 170 | 0.24 | 170 | 0.14 | 150 | 0.04 | 050 | 0 | - |
| 75 | a | a | a | a | a | a | a | a | a | a | a | a |

a - No data

Table H-4. Current Velocities and Directions, Station 2, October 3-4, 1973 (continued)

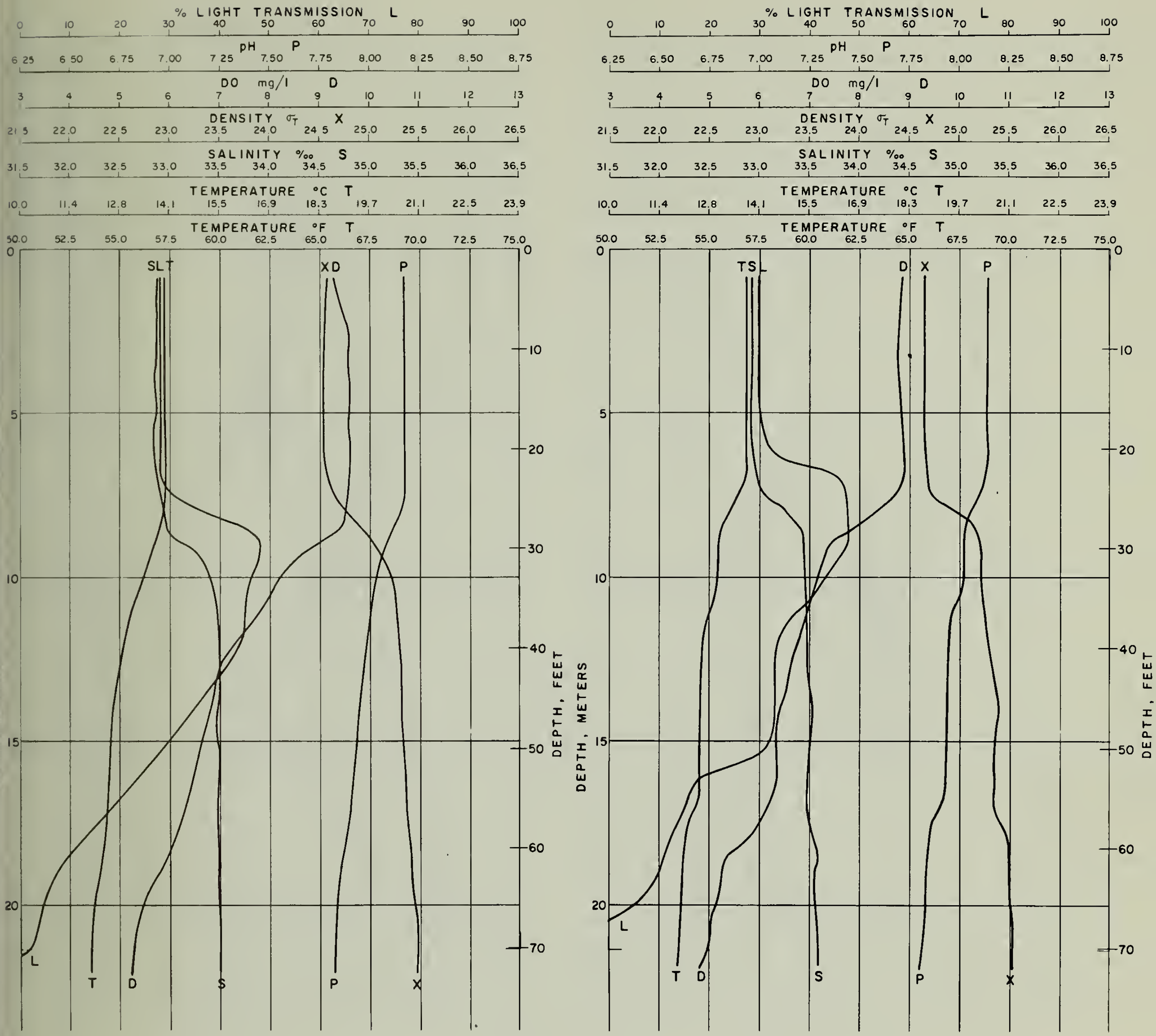
| Time (PDT) | 2400 | | 0100 | | 0200 | | 0300 | | 0400 | | 0500 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.35 | 225 | 0.40 | 280 | 0.33 | 310 | 0.50 | 315 | 0.53 | 330 | 0.63 | 330 |
| 6 | 0.37 | 250 | 0.38 | 275 | 0.41 | 310 | 0.54 | 320 | 0.55 | 320 | 0.58 | 330 |
| 10 | 0.52 | 265 | 0.40 | 290 | 0.50 | 315 | 0.75 | 325 | 0.75 | 330 | 0.60 | 320 |
| 15 | 0.28 | 290 | 0.38 | 305 | 0.45 | 330 | 0.47 | 330 | 0.51 | 320 | 0.49 | 330 |
| 20 | 0.20 | 290 | 0.24 | 325 | 0.30 | 320 | 0.28 | 335 | 0.47 | 320 | 0.59 | 330 |
| 30 | 0.14 | 075 | 0.14 | 045 | 0.24 | 035 | 0.29 | 355 | 0.47 | 345 | 0.40 | 345 |
| 40 | 0.25 | 050 | 0.40 | 025 | 0.45 | 025 | 0.40 | 015 | 0.37 | 005 | 0.29 | 015 |
| 50 | 0.35 | 040 | 0.25 | 025 | 0.41 | 055 | 0.49 | 005 | 0.30 | 035 | 0.22 | 060 |
| 60 | 0.21 | 025 | 0.13 | 015 | 0.37 | 005 | 0.43 | 360 | 0.39 | 005 | 0.25 | 325 |
| 70 | 0.16 | 035 | 0.30 | 015 | 0.29 | 360 | 0.30 | 355 | 0.26 | 345 | 0.26 | 330 |
| 75 | a | a | a | a | 0.27 | 360 | 0.21 | 340 | 0.21 | 340 | 0.27 | 330 |

| Time (PDT) | 0600 | | 0708 | | 0800 | | 0905 | | 1000 | | 1100 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.28 | 330 | 0.34 | 340 | 0.32 | 335 | 0.28 | 355 | 0.25 | 030 | 0.19 | 045 |
| 6 | 0.38 | 335 | 0.40 | 330 | 0.55 | 340 | 0.33 | 005 | 0.27 | 020 | 0.18 | 060 |
| 10 | 0.46 | 330 | 0.43 | 320 | 0.35 | 335 | 0.27 | 005 | 0.36 | 025 | 0.27 | 055 |
| 15 | 0.52 | 335 | 0.39 | 340 | 0.28 | 350 | 0.38 | 360 | 0.27 | 015 | 0.28 | 050 |
| 20 | 0.37 | 345 | 0.47 | 350 | 0.28 | 015 | 0.40 | 005 | 0.23 | 035 | 0.40 | 040 |
| 30 | 0.15 | 340 | 0.13 | 320 | 0.03 | 285 | 0.31 | 330 | 0.14 | 345 | 0.03 | 115 |
| 40 | 0.09 | 350 | 0.05 | 315 | 0.08 | 270 | 0.22 | 220 | 0.46 | 225 | 0.23 | 230 |
| 50 | 0.07 | 325 | 0.07 | 345 | 0.12 | 225 | 0.39 | 220 | 0.40 | 210 | 0.43 | 215 |
| 60 | 0.10 | 330 | 0.06 | 290 | 0.15 | 260 | 0.36 | 215 | 0.46 | 225 | 0.30 | 230 |
| 70 | 0.17 | 295 | 0 | - | 0.20 | 230 | 0.40 | 225 | 0.32 | 230 | 0.26 | 235 |
| 75 | a | a | a | a | a | a | a | a | a | a | a | a |

| Time (PDT) | 1200 | | 1300 | |
|---|---|---|---|---|
| Meter Depth (ft) | Spd kts | Dir deg | Spd kts | Dir deg |
| 3 | 0.16 | 080 | 0.23 | 125 |
| 6 | 0.13 | 110 | 0.28 | 115 |
| 10 | 0.24 | 100 | 0.42 | 115 |
| 15 | 0.28 | 075 | 0.18 | 095 |
| 20 | 0.16 | 095 | 0.10 | 090 |
| 30 | 0.13 | 250 | 0.11 | 285 |
| 40 | 0.23 | 240 | 0.28 | 275 |
| 50 | 0.33 | 235 | 0.29 | 255 |
| 60 | 0.21 | 240 | 0.18 | 285 |
| 70 | 0.17 | 255 | 0.05 | 325 |
| 75 | a | a | a | a |

a = No data

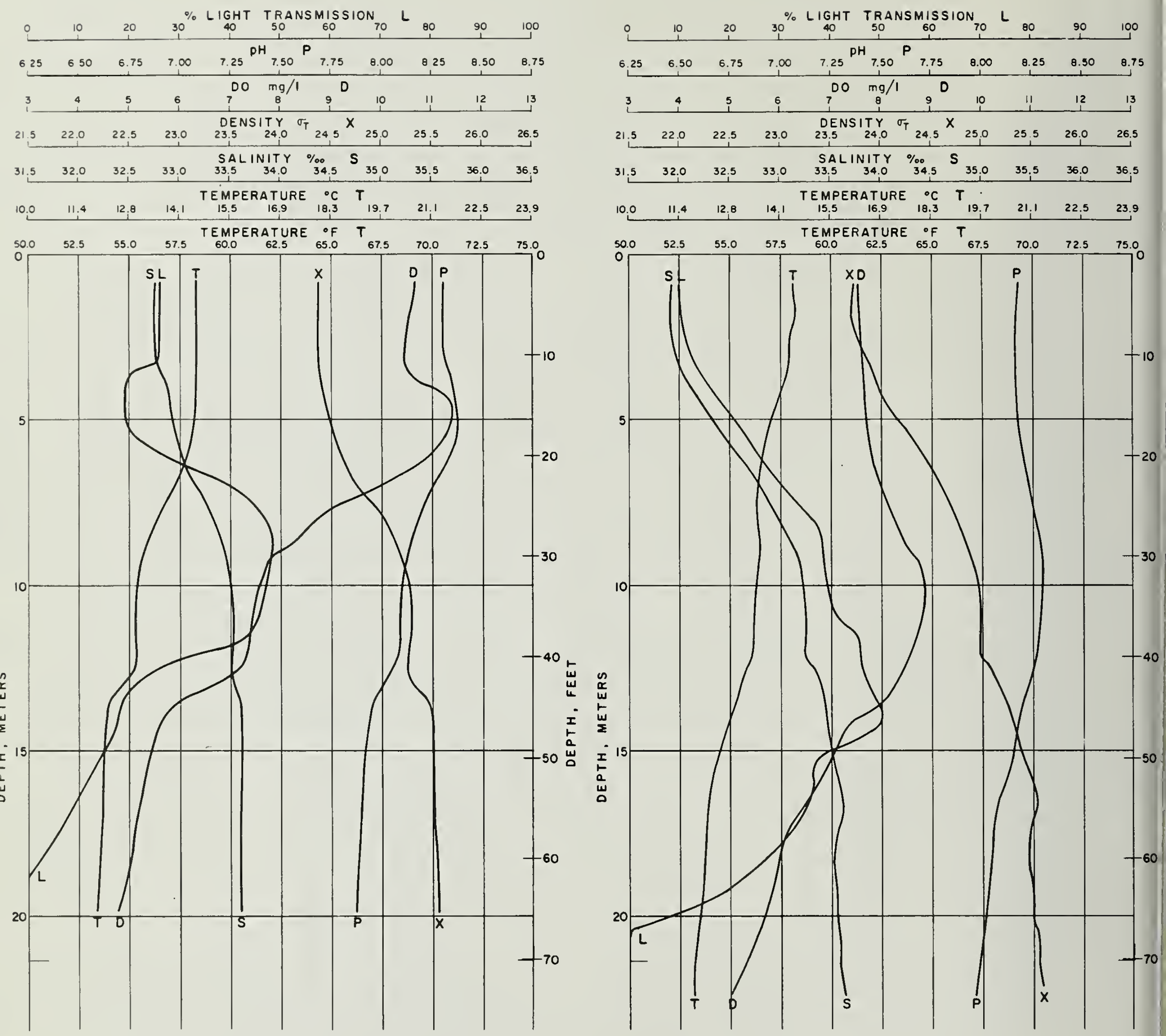
# Physical - Chemical Profiles



0900 PDT October 2, 1973

1000 PDT October 2, 1973

Fig. H-1 Profiles at Station 1



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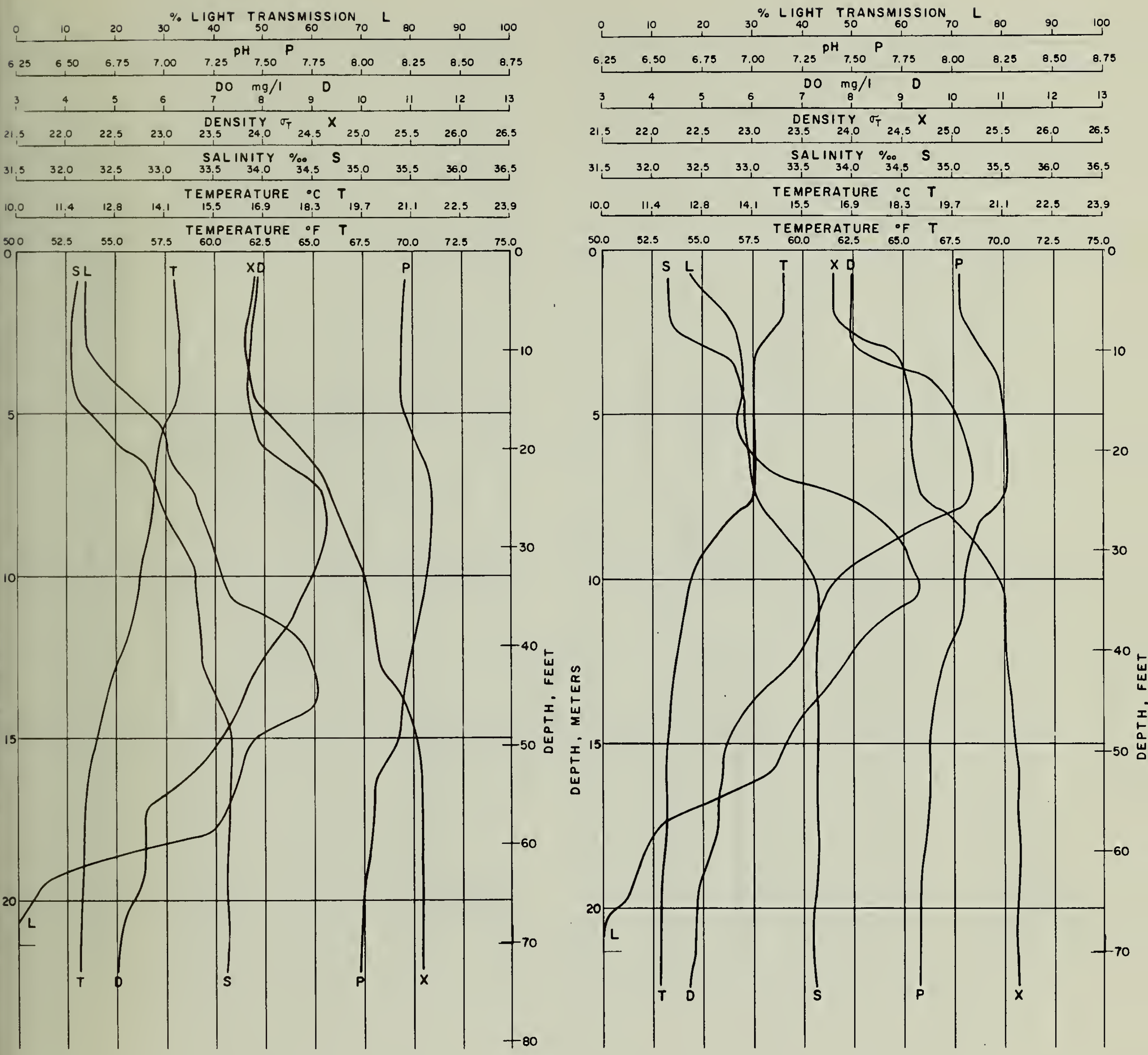

1300 PDT October 2, 1973

1400 PDT October 2, 1973

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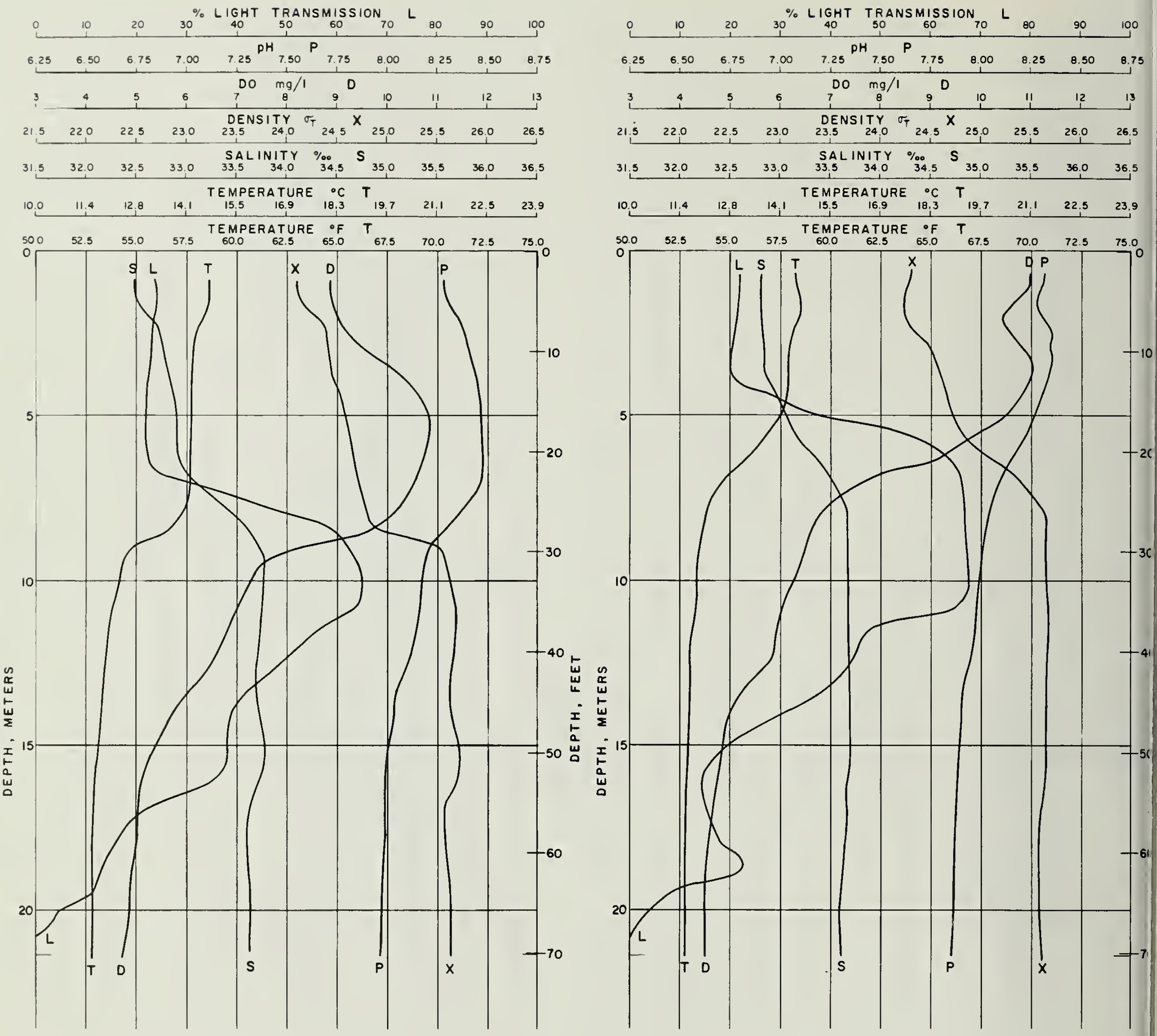

1500 PDT October 2, 1973

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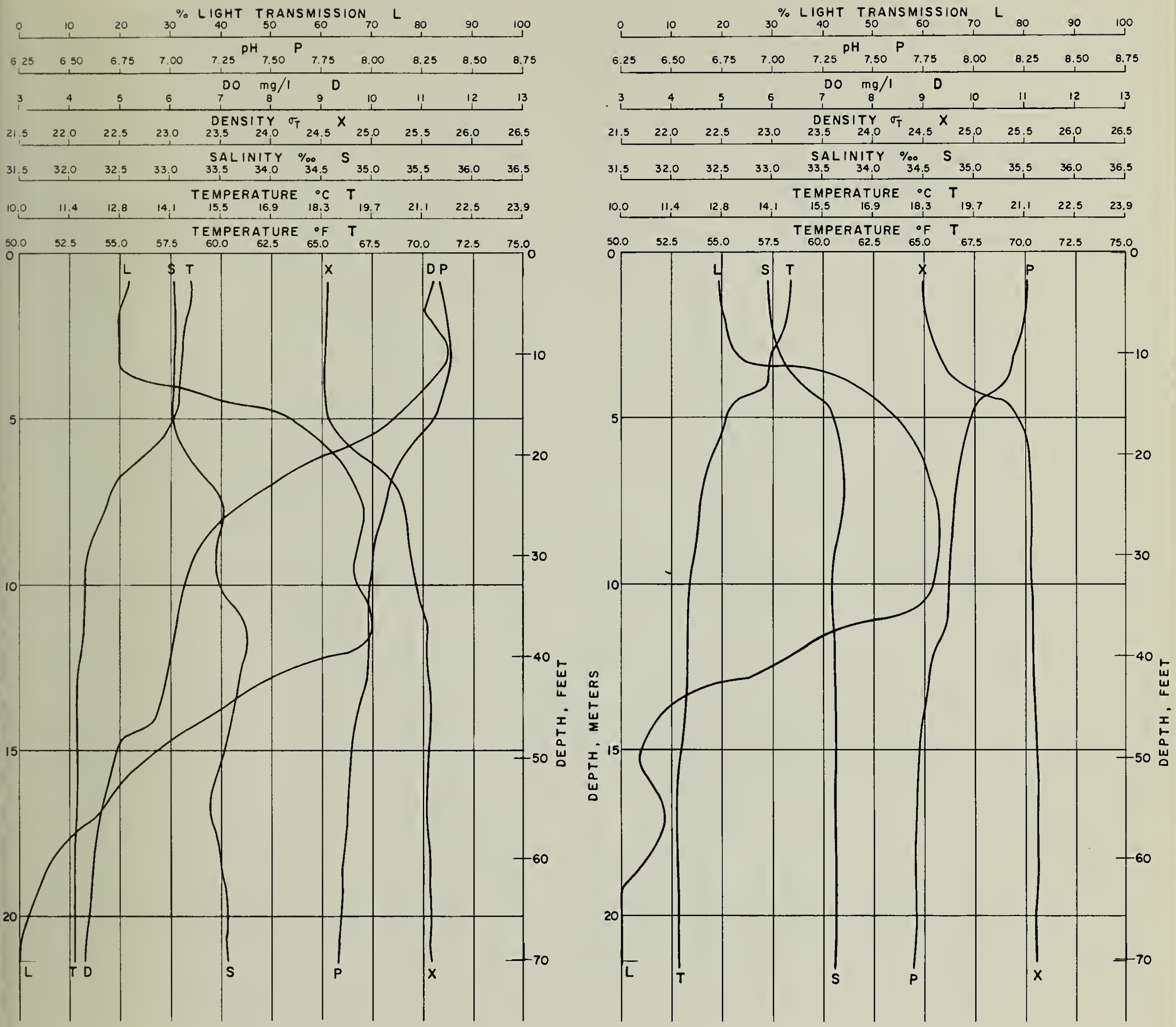
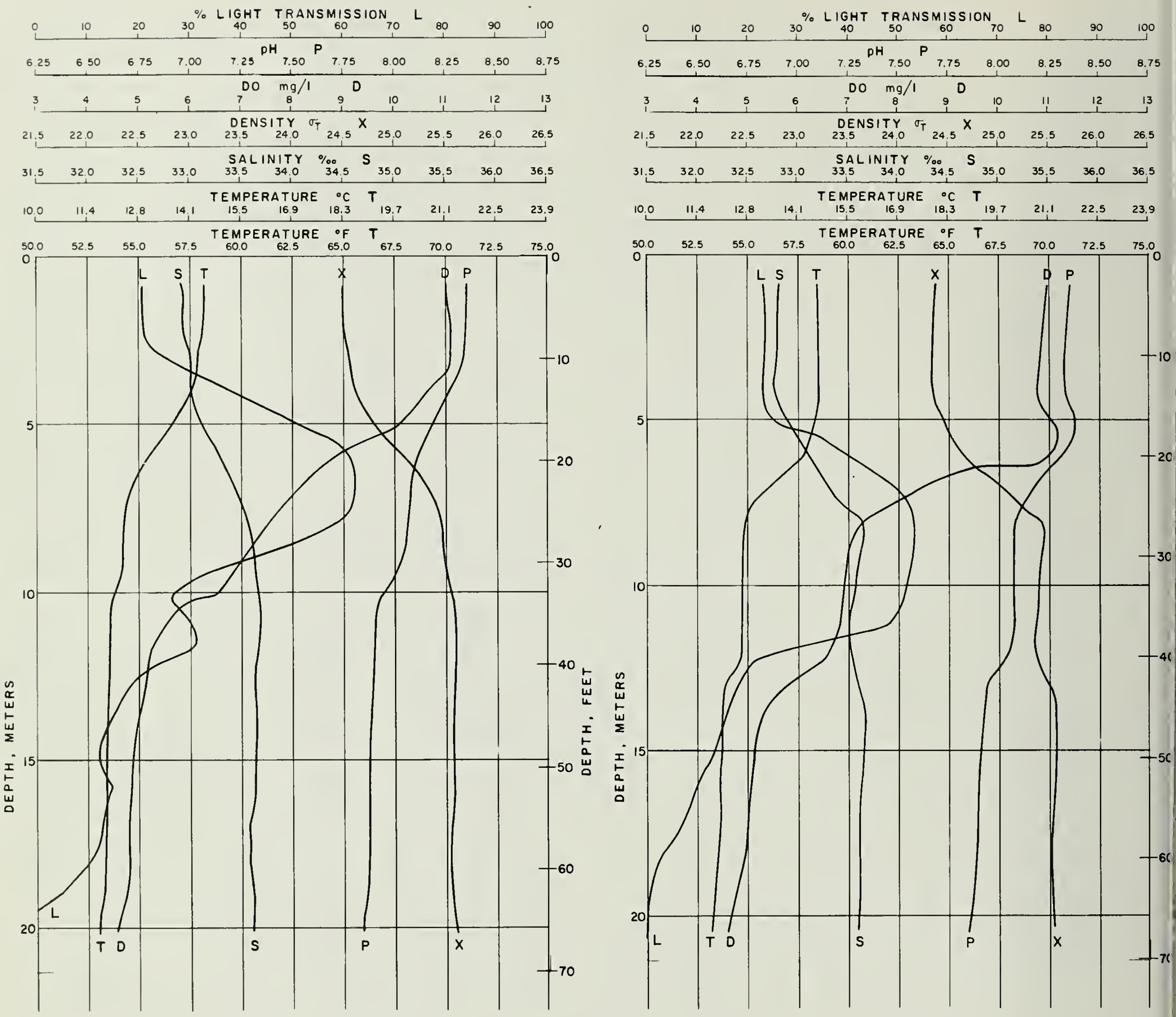
Fig. H-4 Profiles at Station 1



1630 PDT October 2, 1973

1730 PDT October 2, 1973

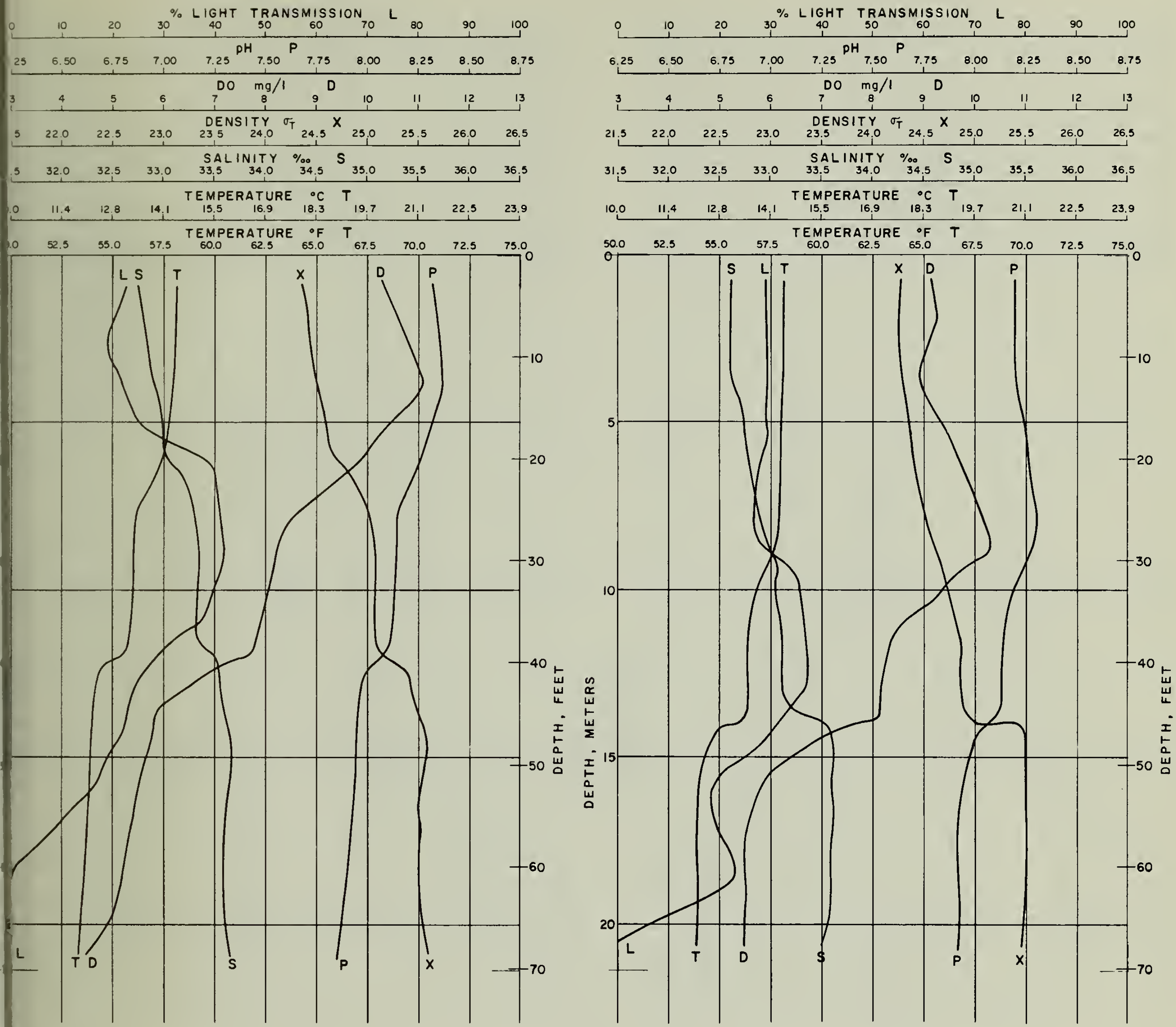
Fig. H-5 Profiles at Station 1



1830 PDT October 2, 1973

1900 PDT October 2, 1973

Fig. H-6 Profiles at Station 1



2000 PDT October 2, 1973

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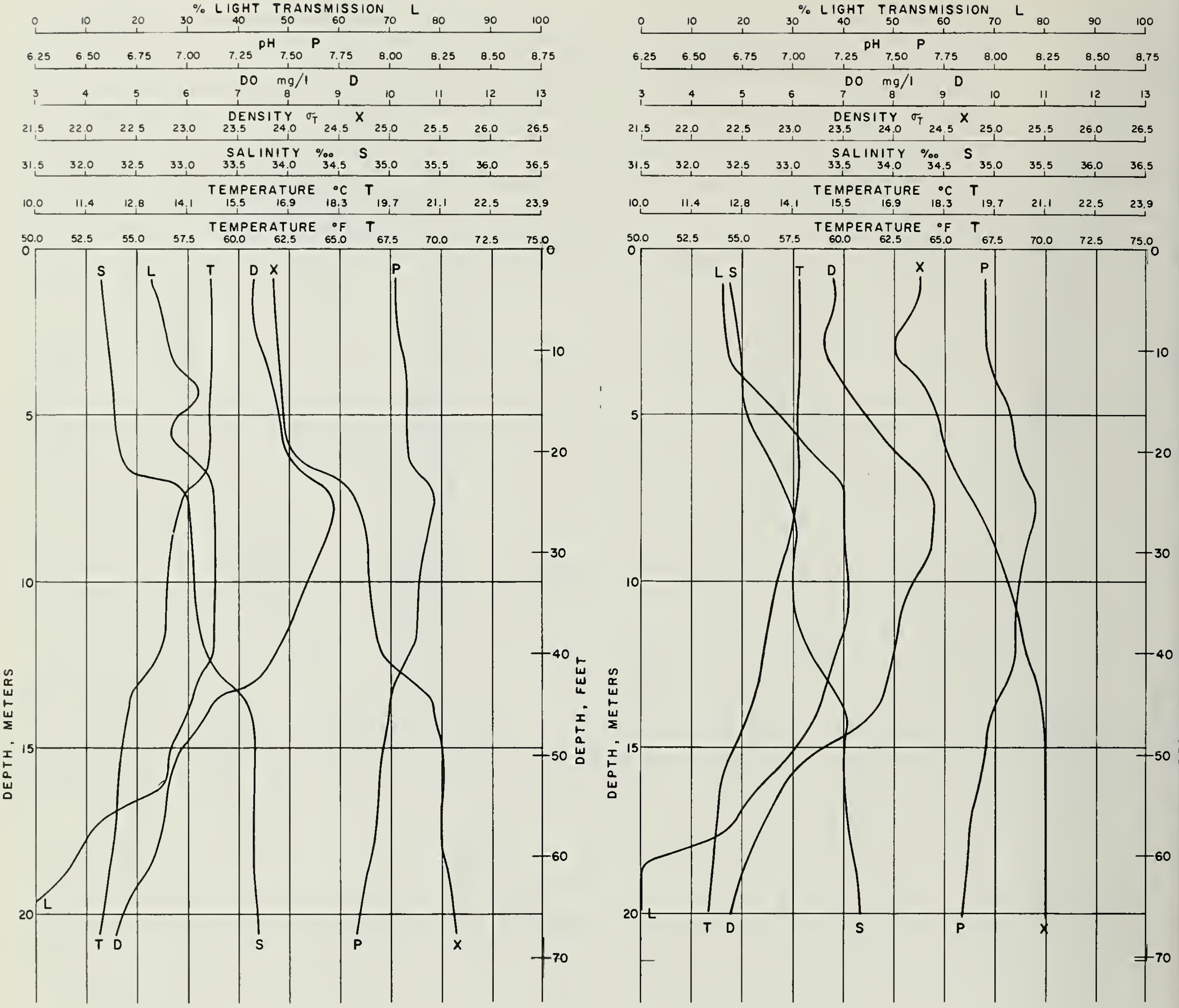

2100 PDT October 2, 1973

2130 PDT October 2, 1973

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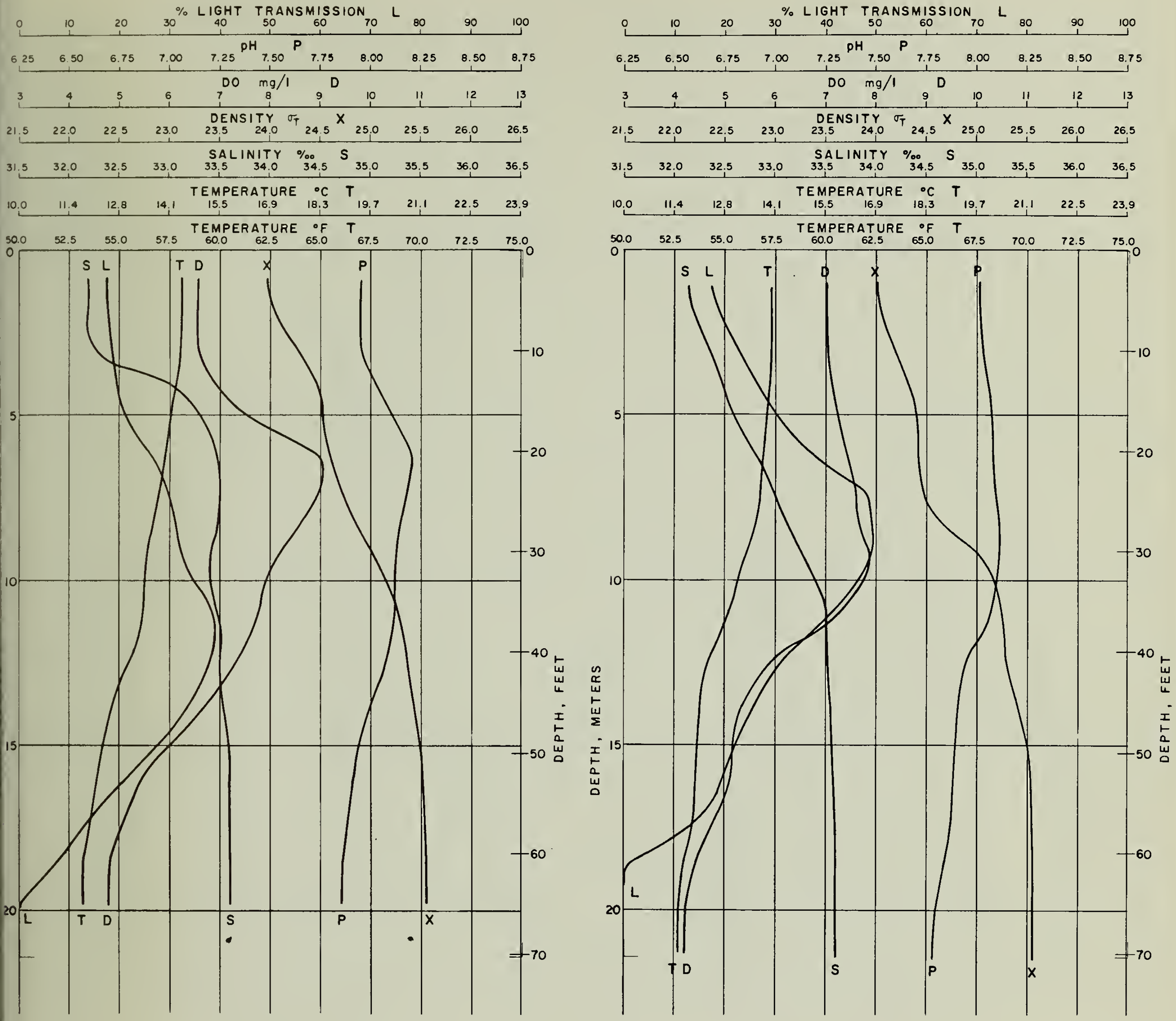

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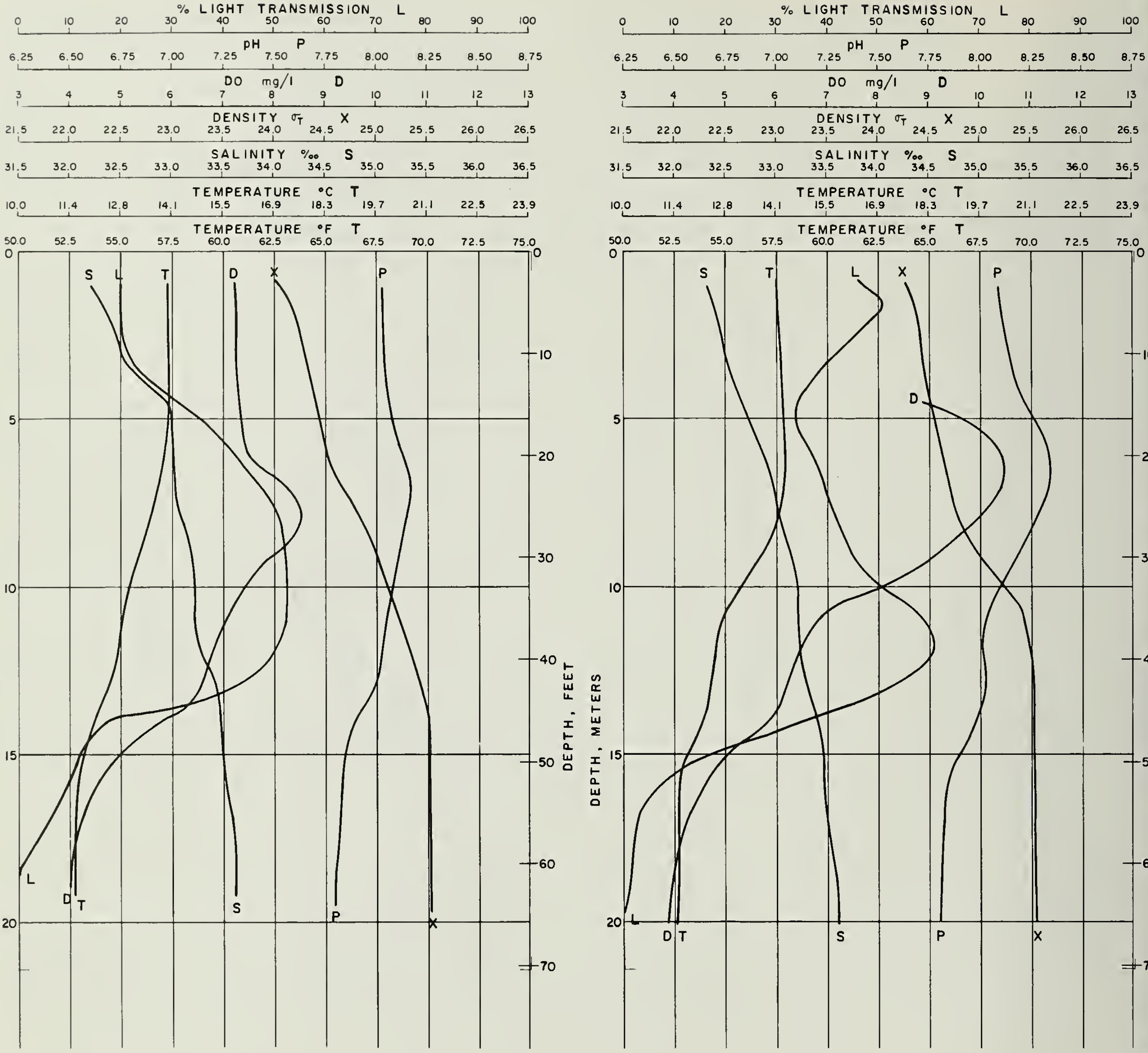
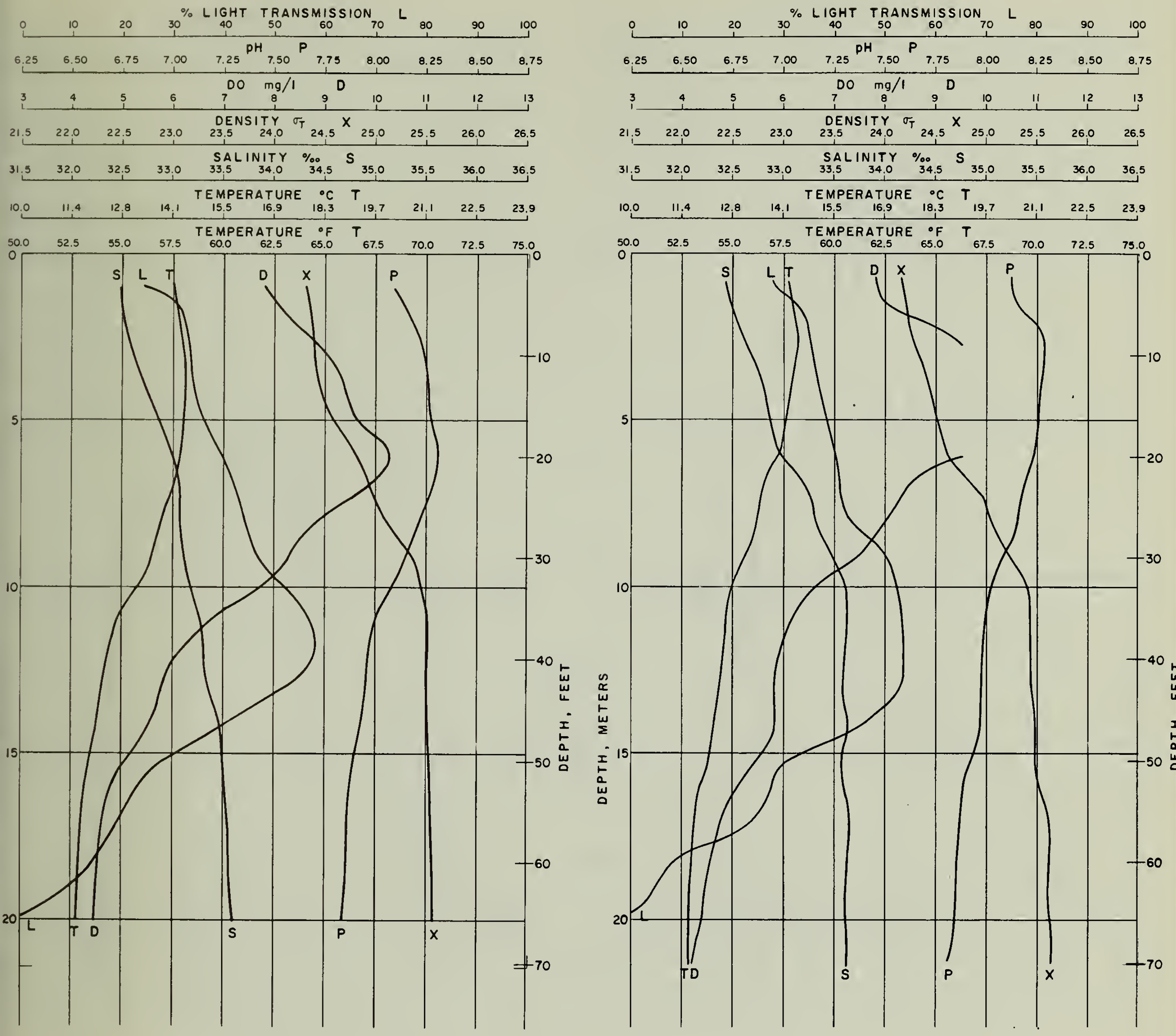


2400 PDT October 2, 1973

0100 PDT October 3, 1973

Fig. H-10 Profiles at Station 1



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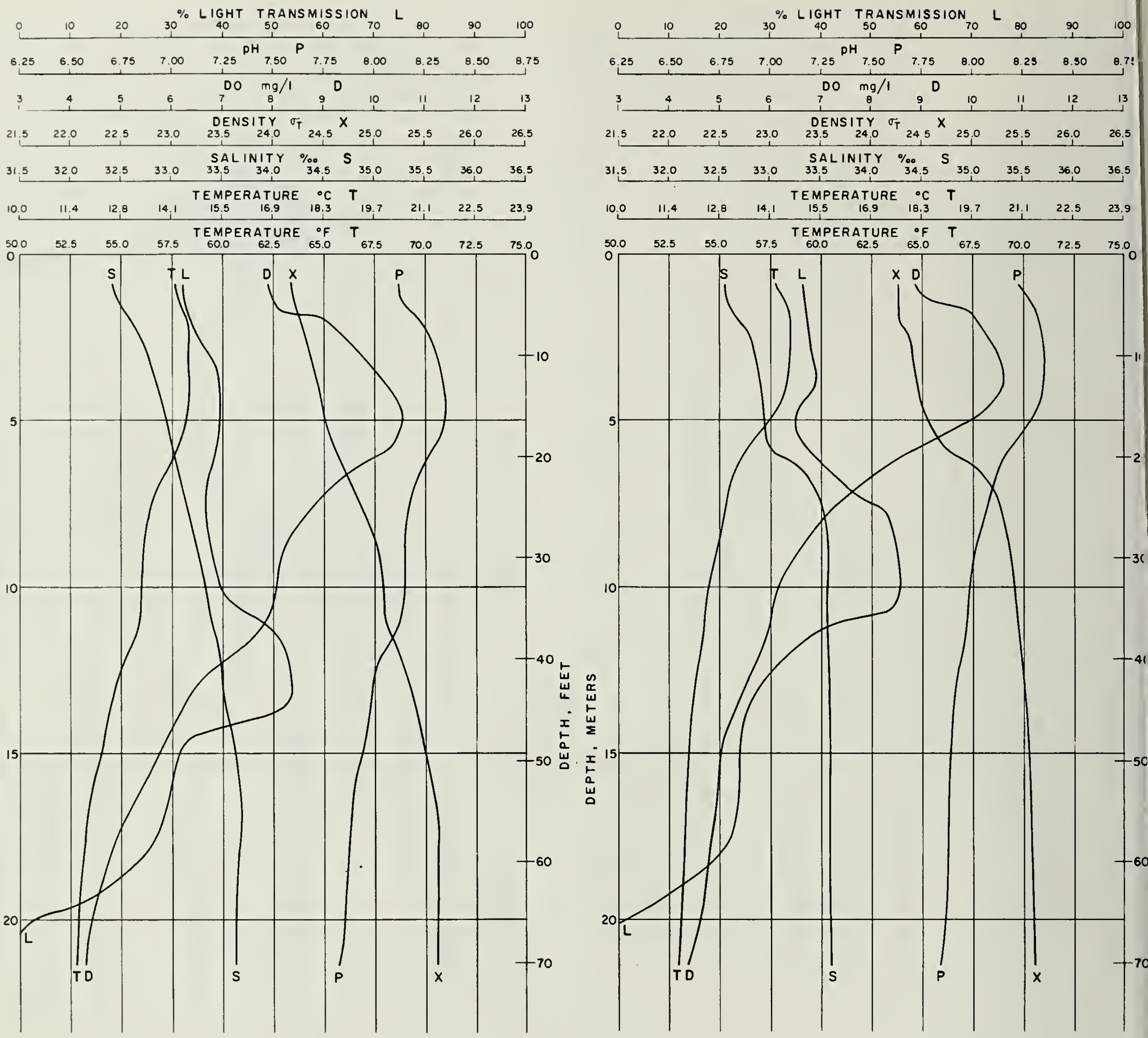

0300 PDT October 3, 1973

0400 PDT October 3, 1973

Fig. H-12 Profiles at Station 1

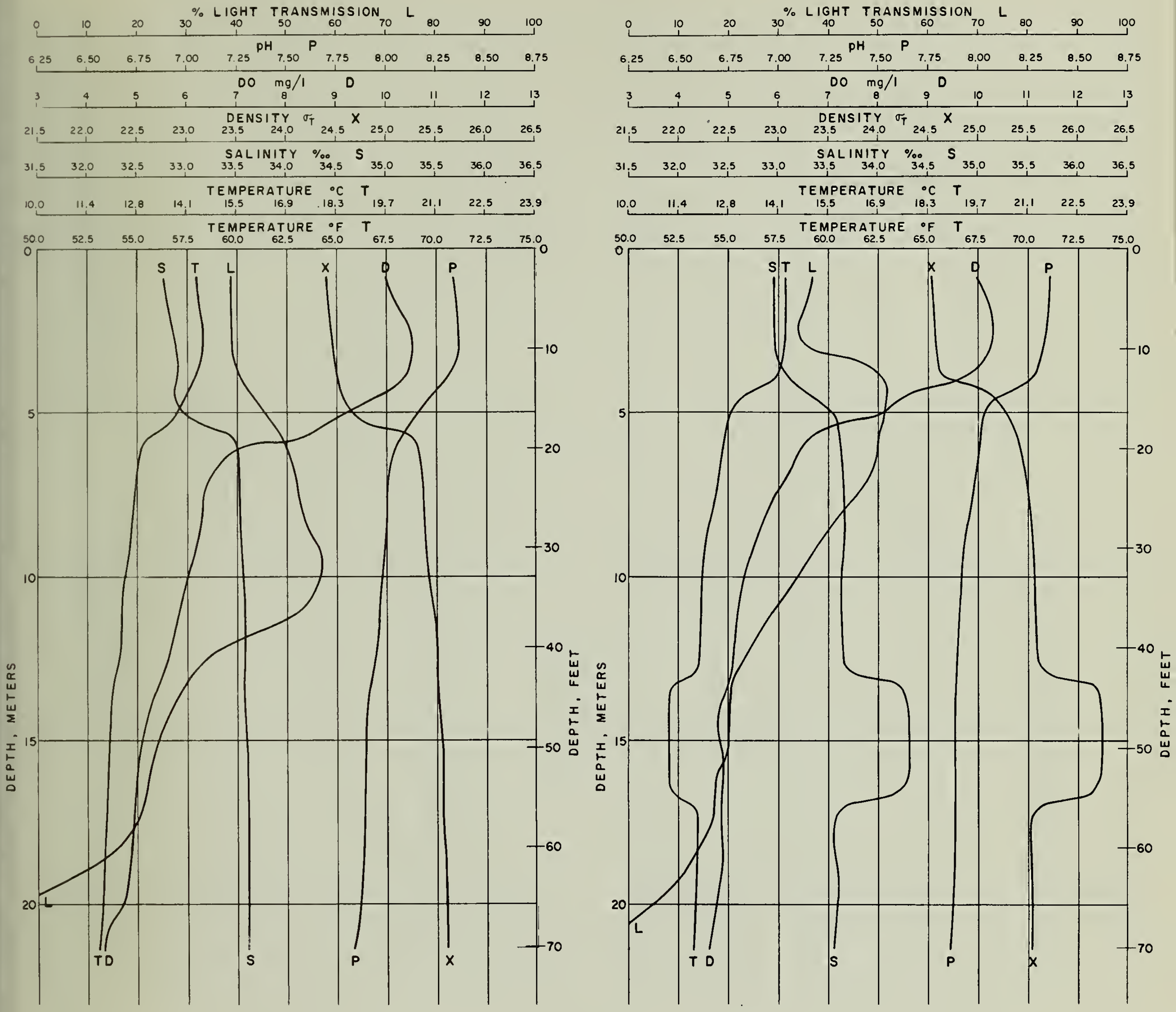

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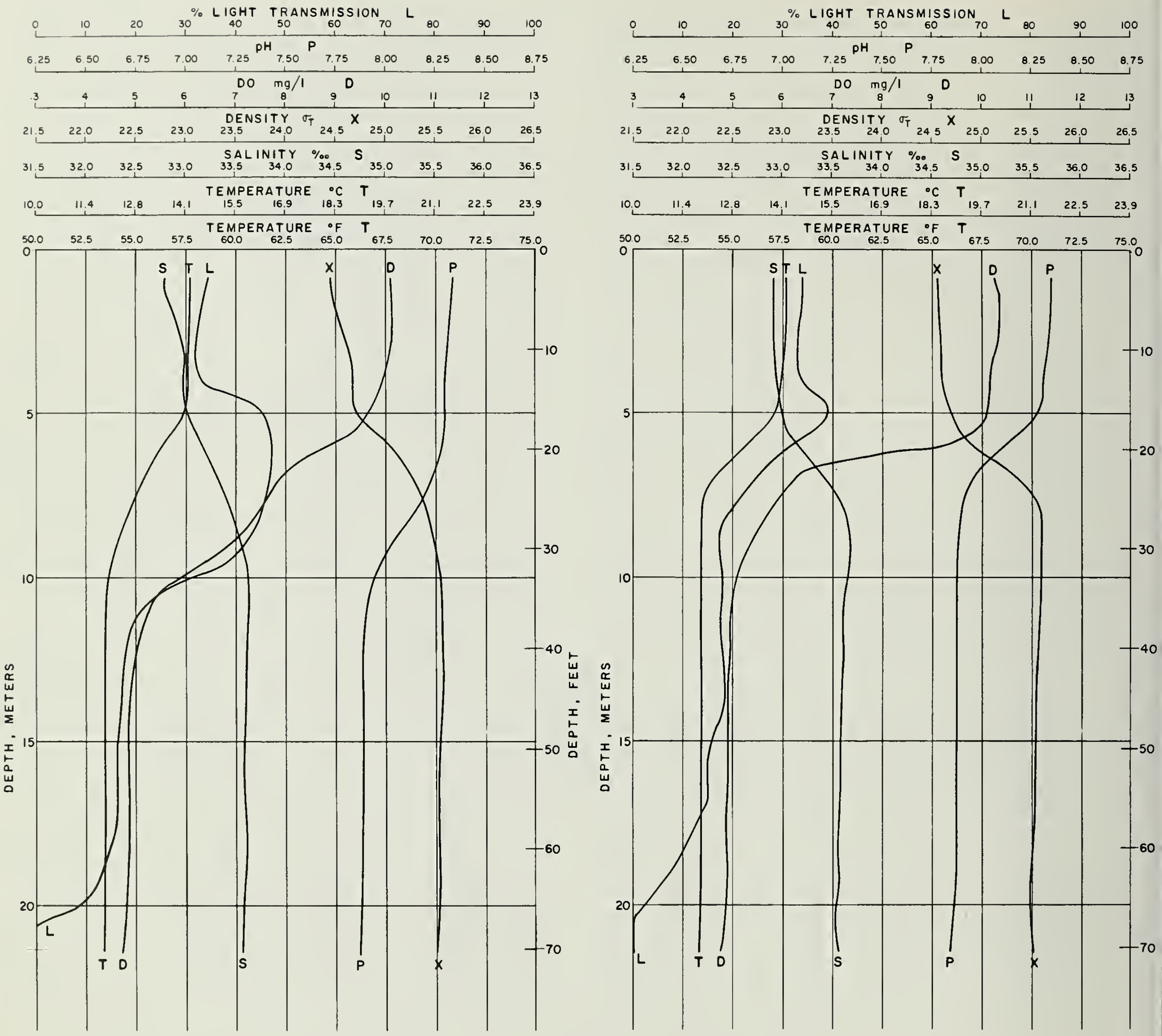
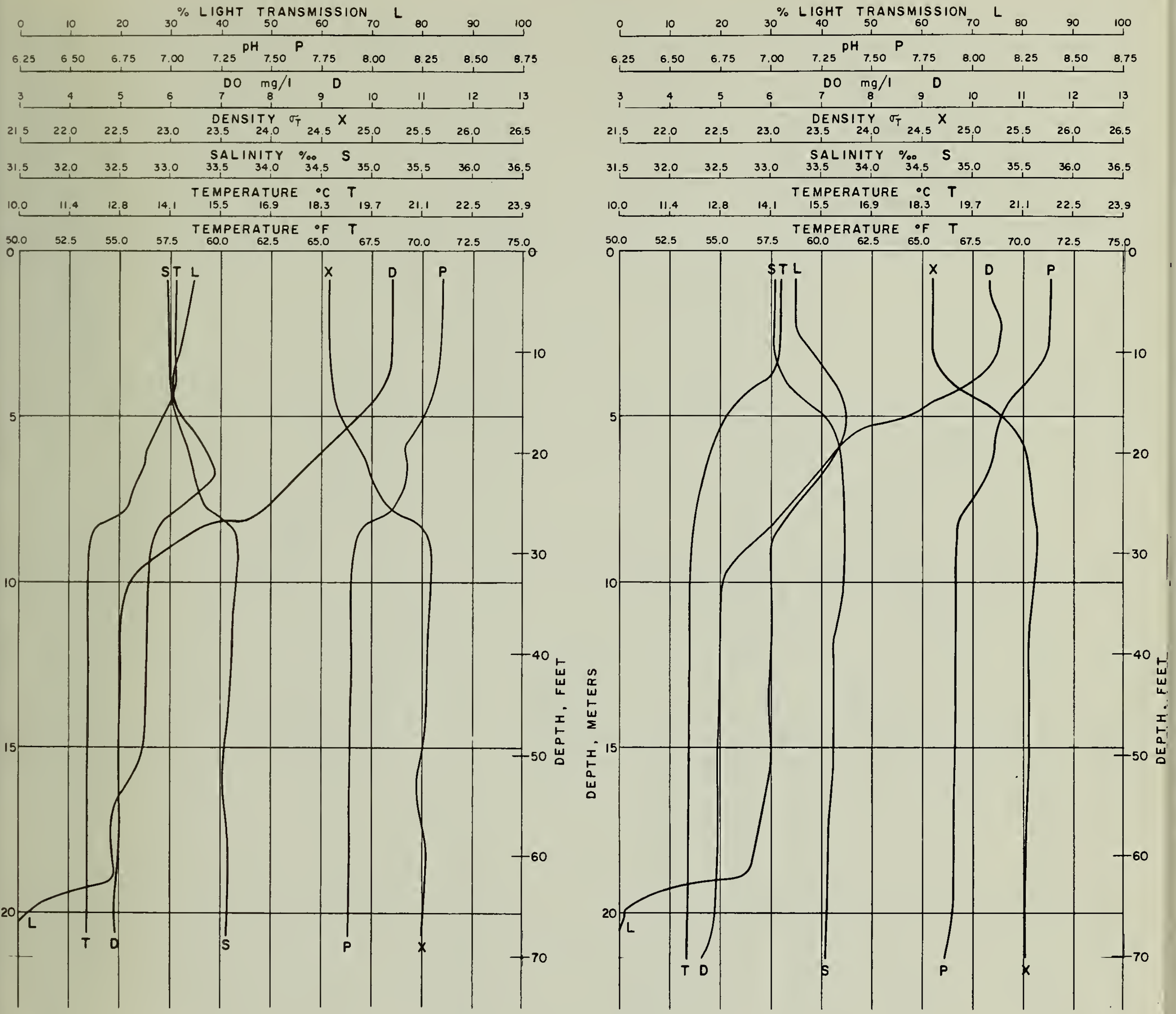
Fig. H-13 Profiles at Station 1



0700 PDT October 3, 1973

0800 PDT October 3, 1973

Fig. H-14 Profiles at Station 1



0900 PDT October 3, 1973

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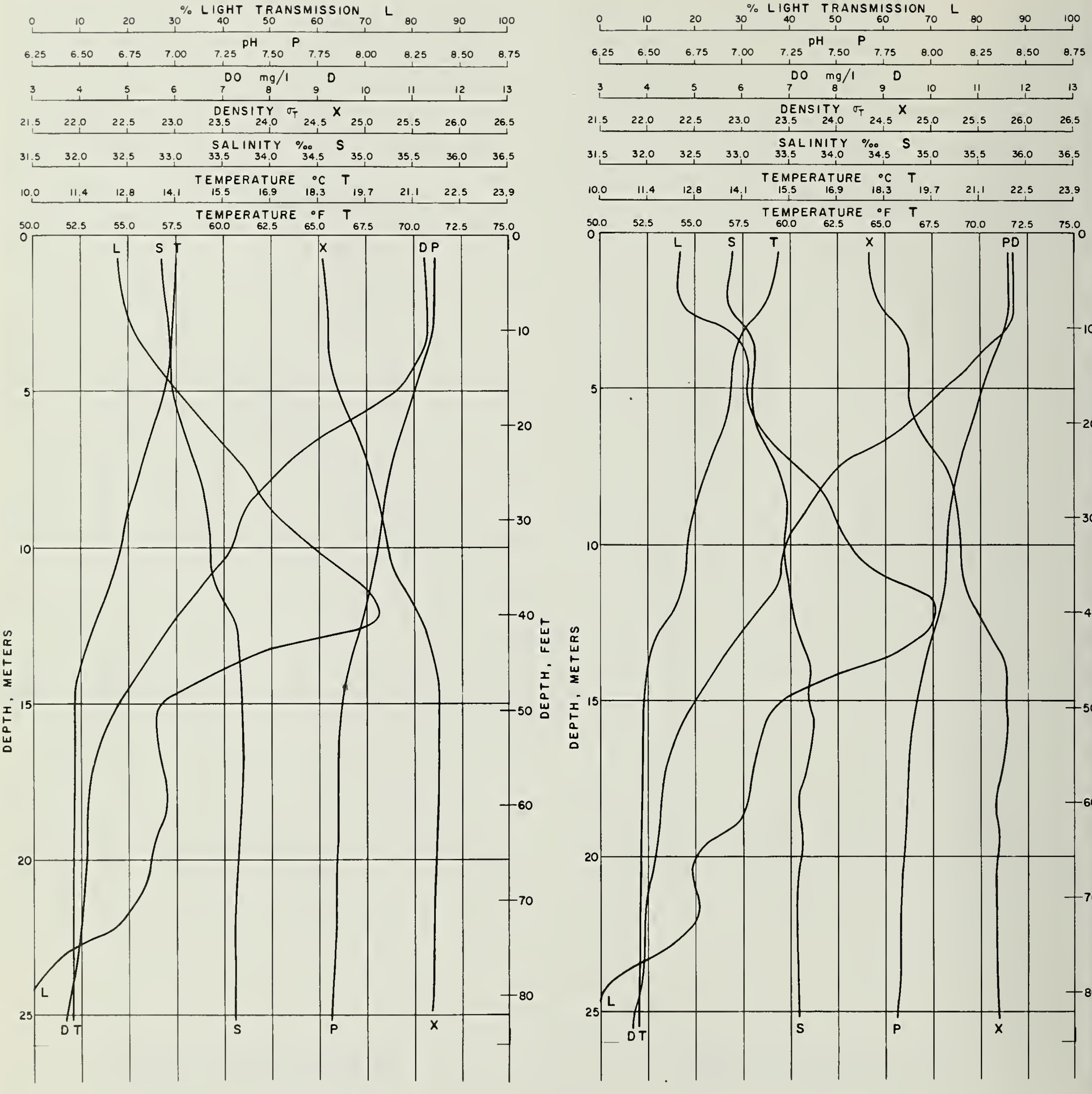
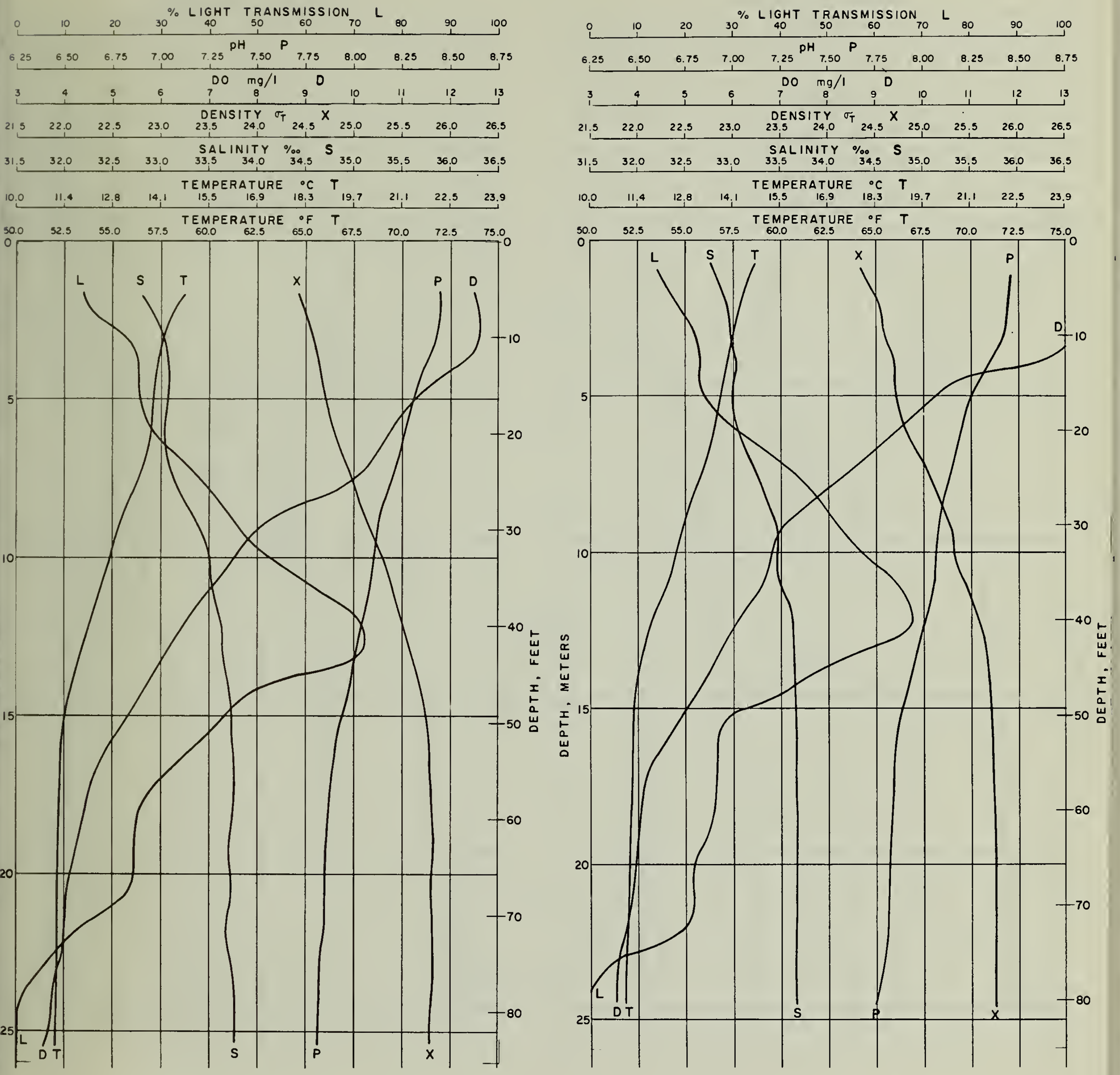
Fig. H-15 Profiles at Station 1



1200 PDT October 3, 1973

1300 PDT October 3, 1973

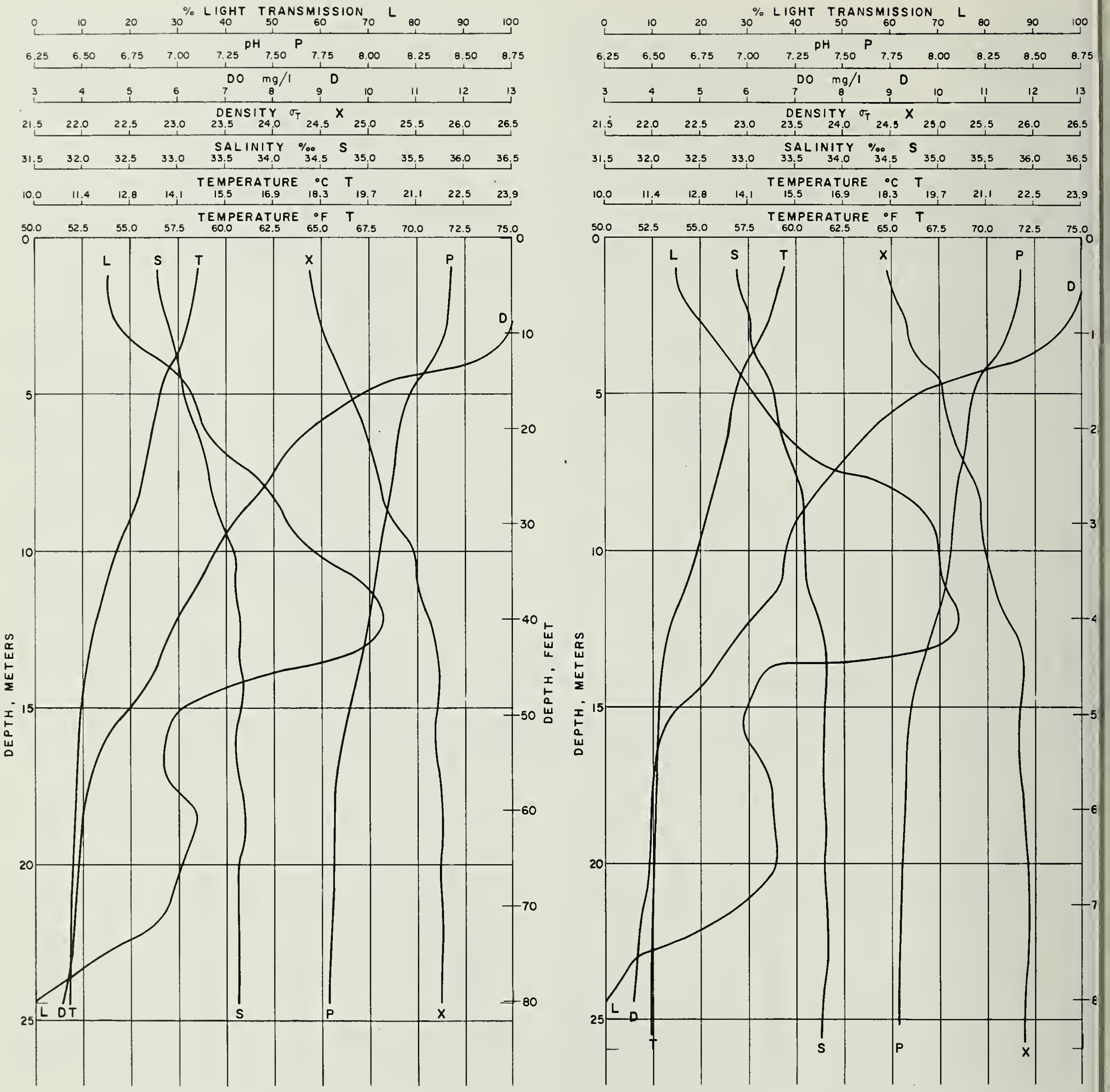
Fig. H-16 Profiles at Station 2



1400 PDT October 3, 1973

1500 PDT October 3, 1973

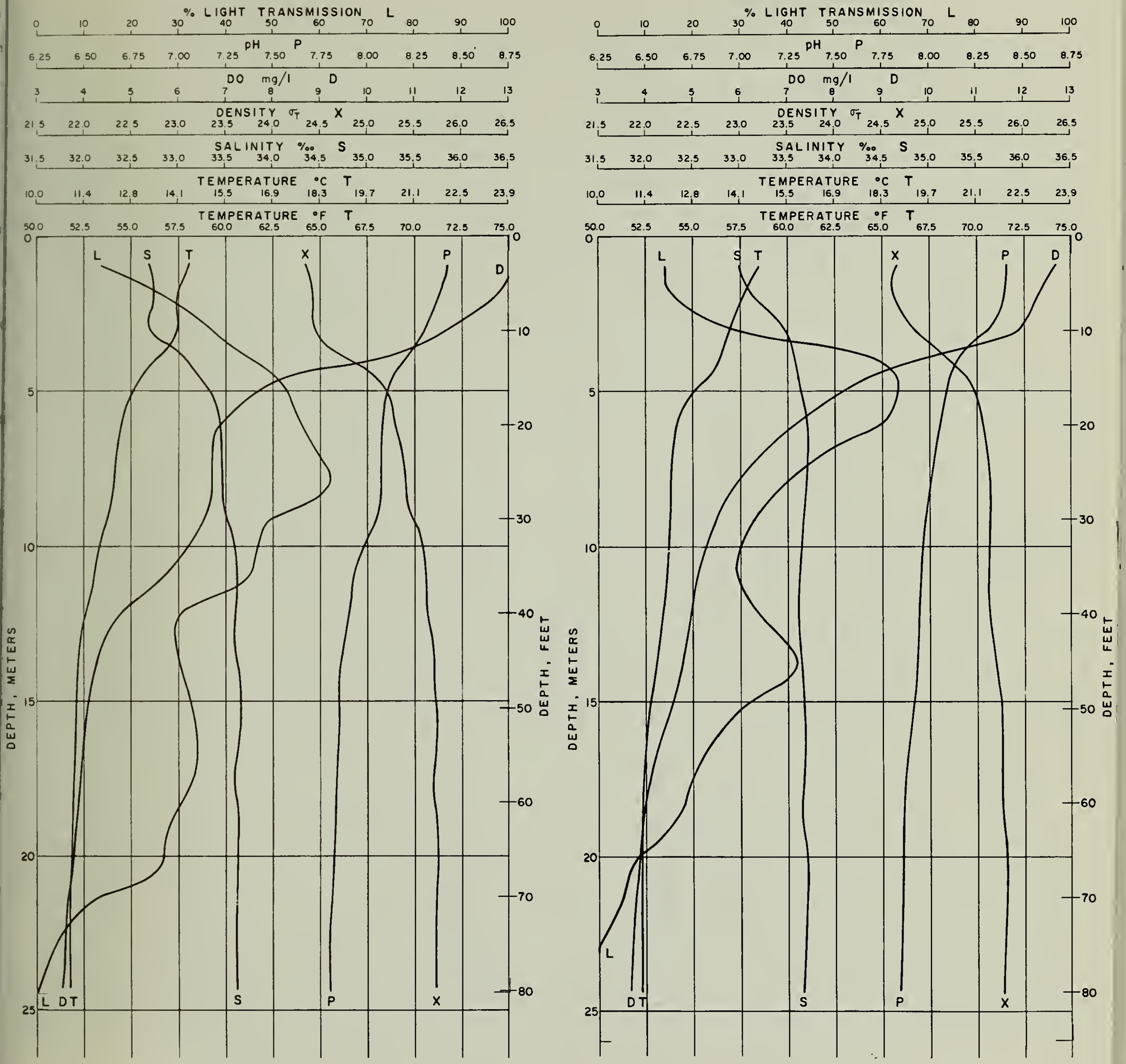
Fig. H-17 Profiles at Station 2



1600 PDT October 3, 1973

1700 PDT October 3, 1973

Fig. H-18 Profiles at Station 2



1800 PDT October 3, 1973

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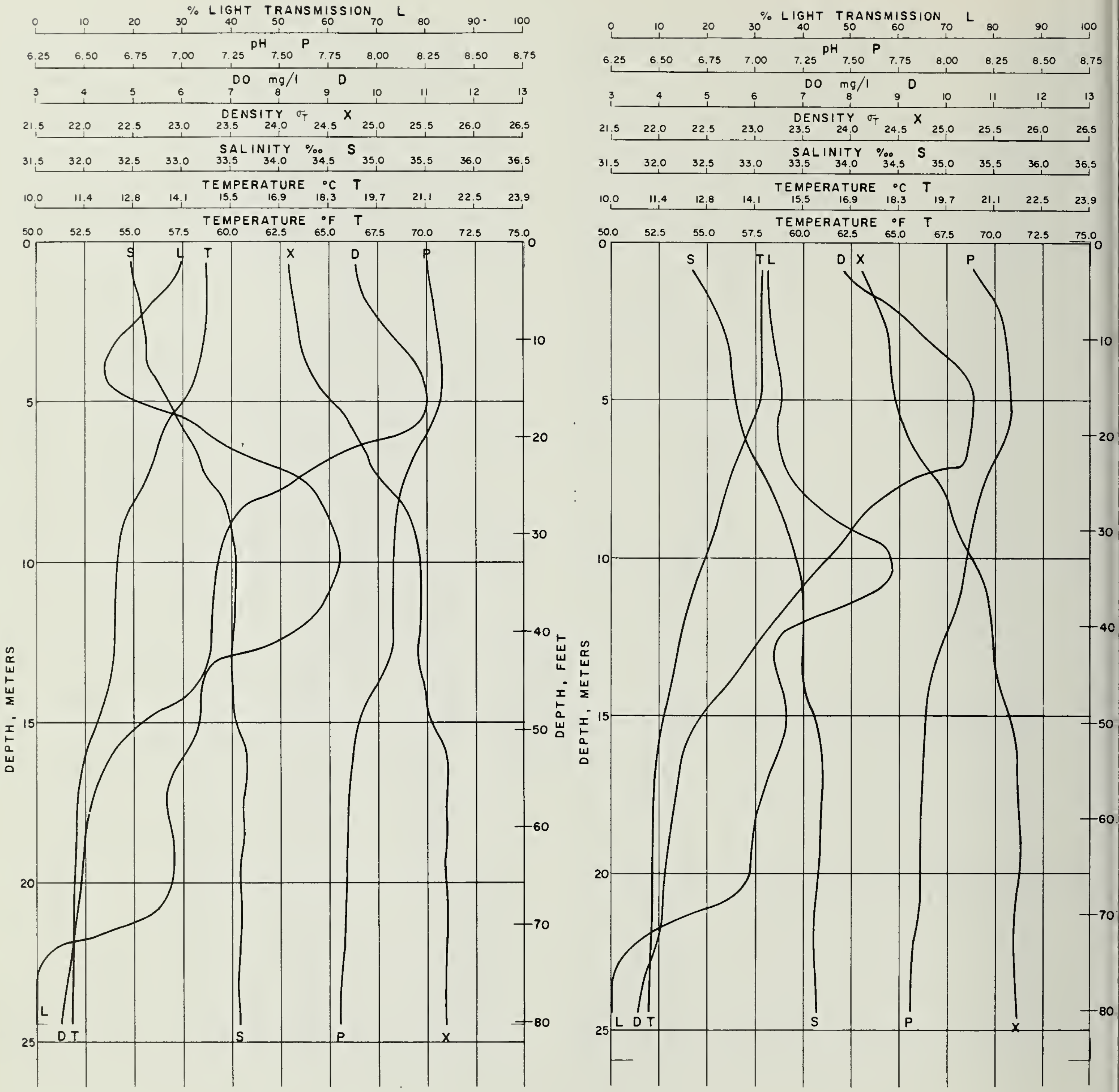
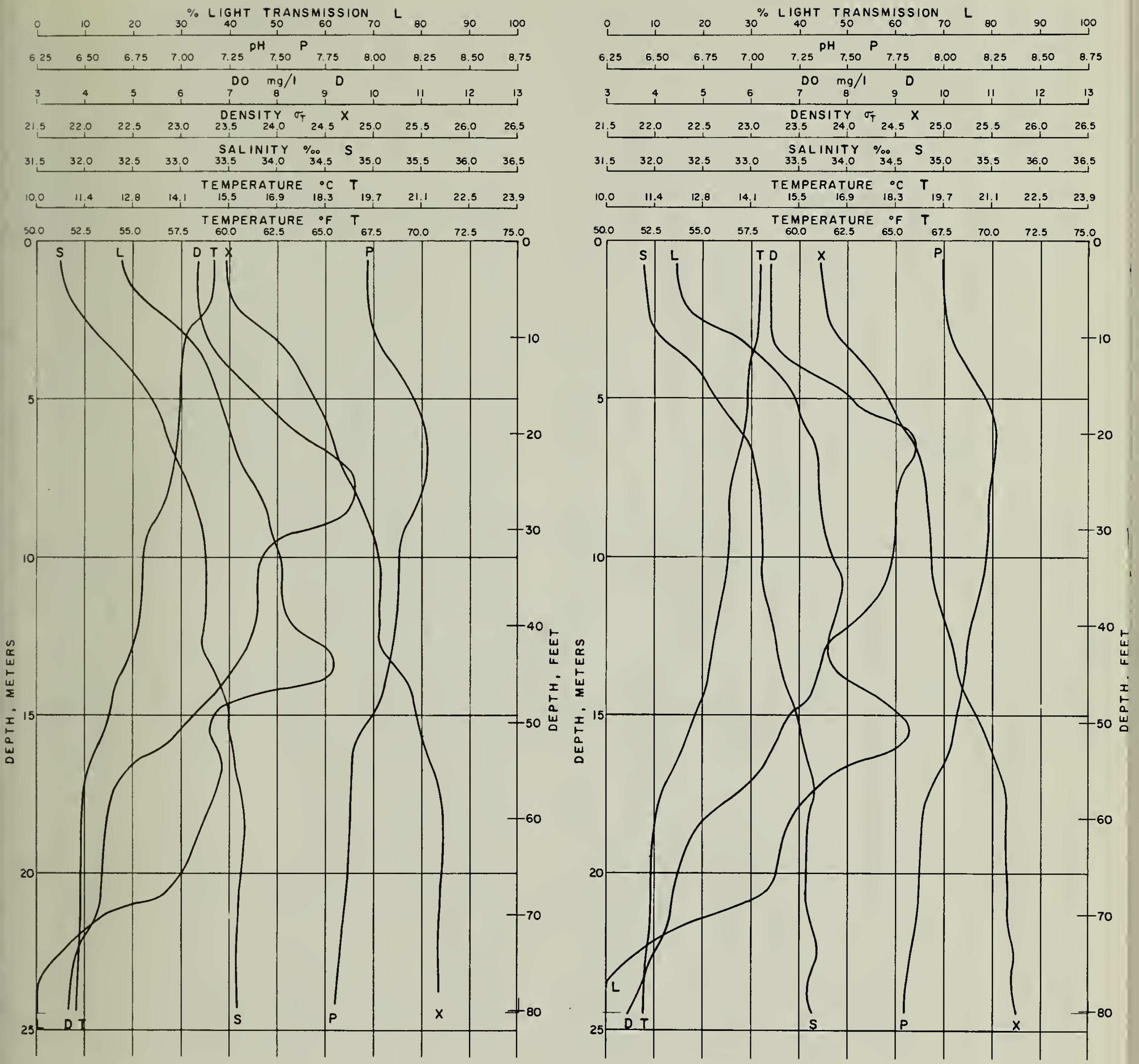
Fig. H-19 Profiles at Station 2



2000 PDT October 3, 1973

2100 PDT October 3, 1973

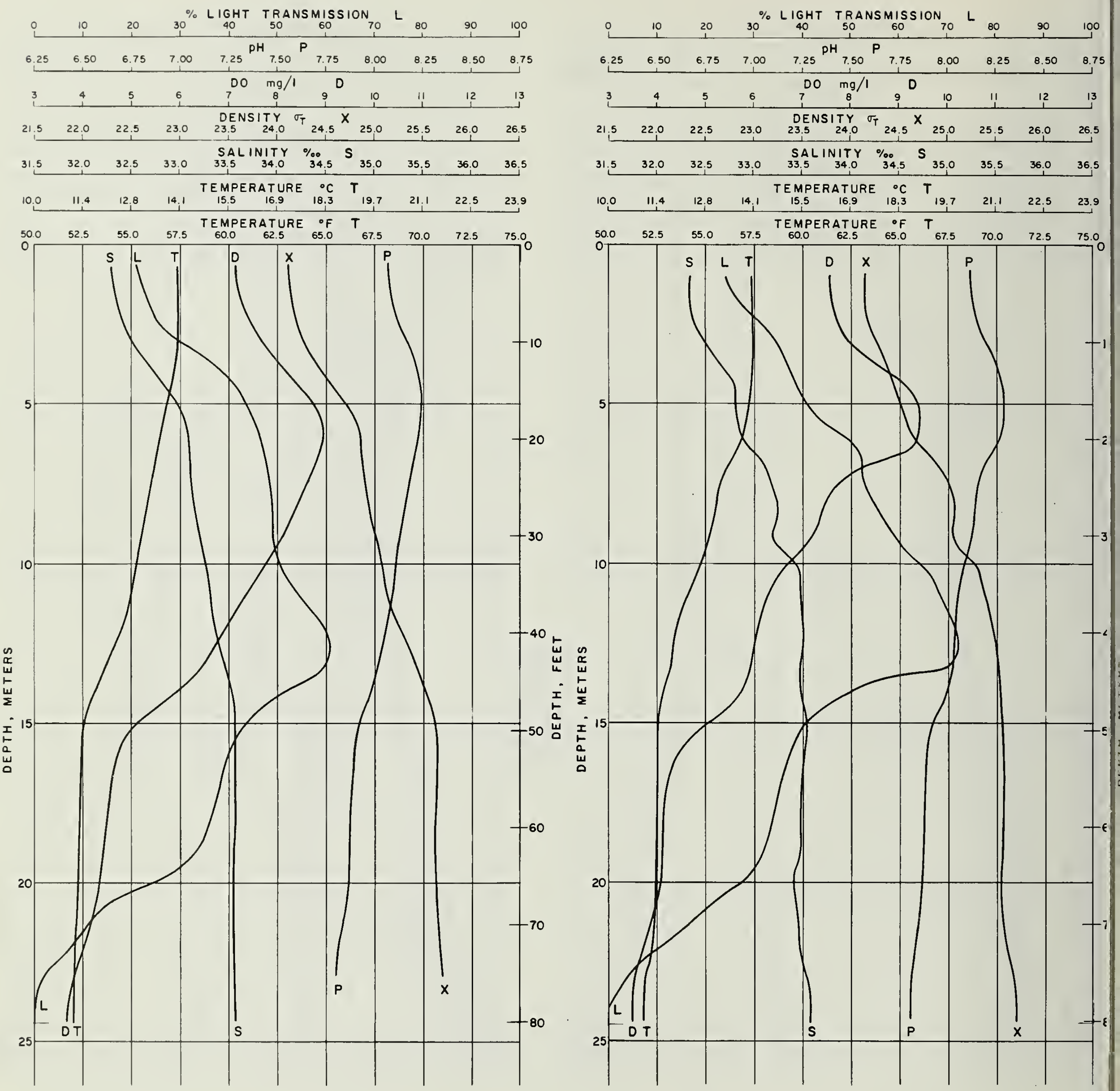
Fig. H-20 Profiles at Station 2



2200 PDT October 3, 1973

2300 PDT October 3, 1973

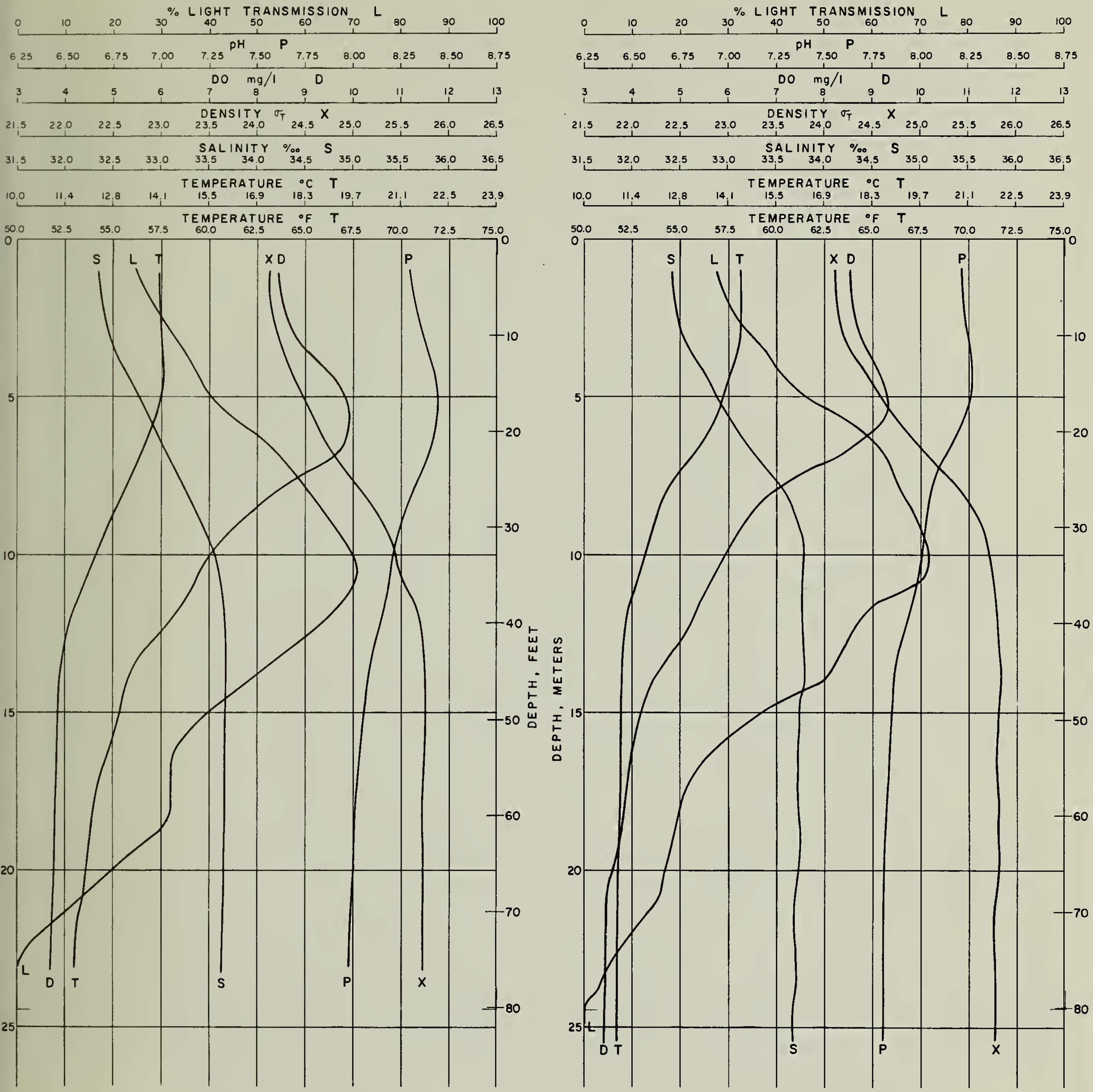
Fig. H-21 Profiles at Station 2



2400 PDT October 3, 1973

0100 October 4, 1973

Fig. H-22 Profiles at Station 2



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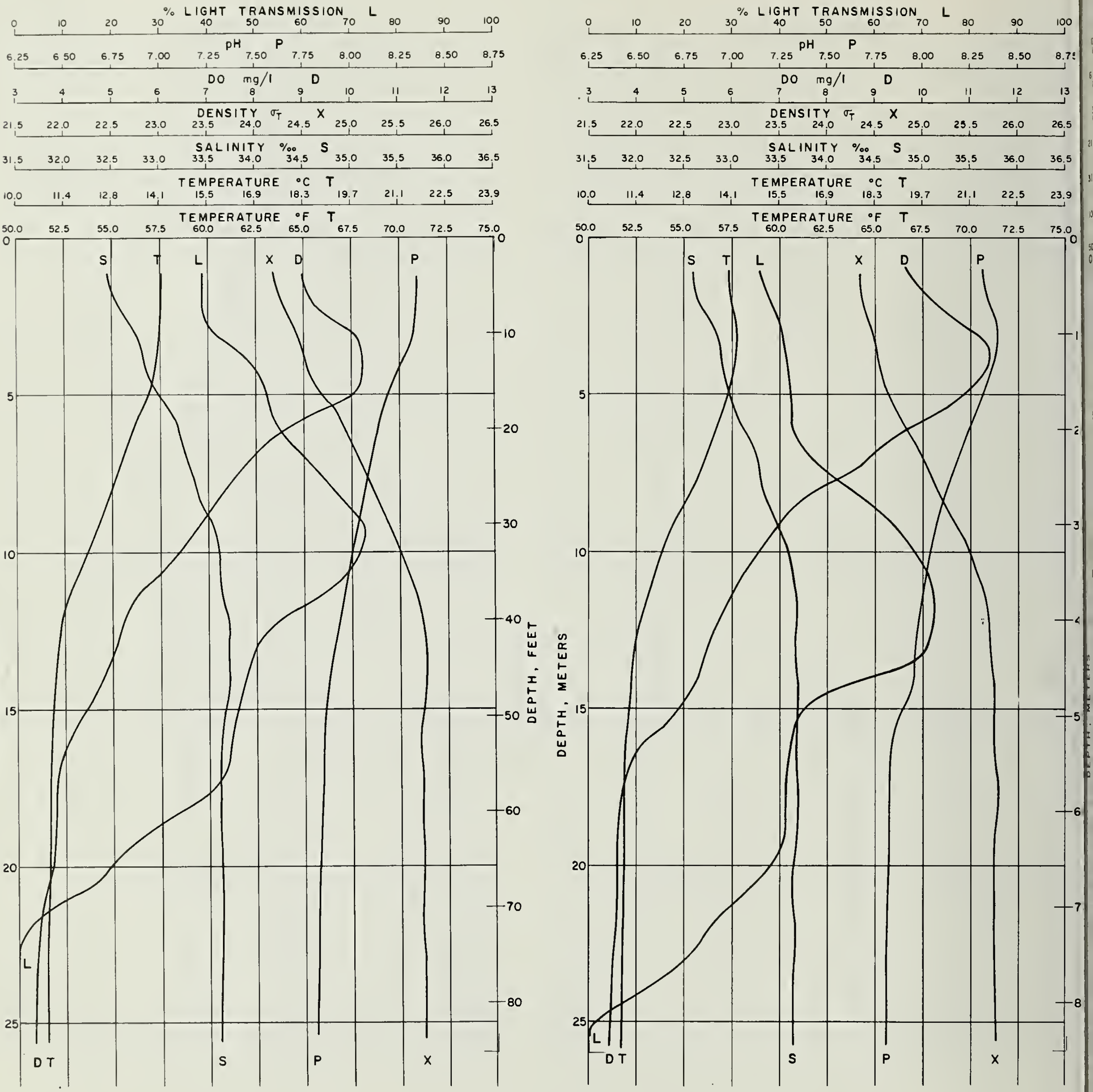
0300 PDT October 4, 1973

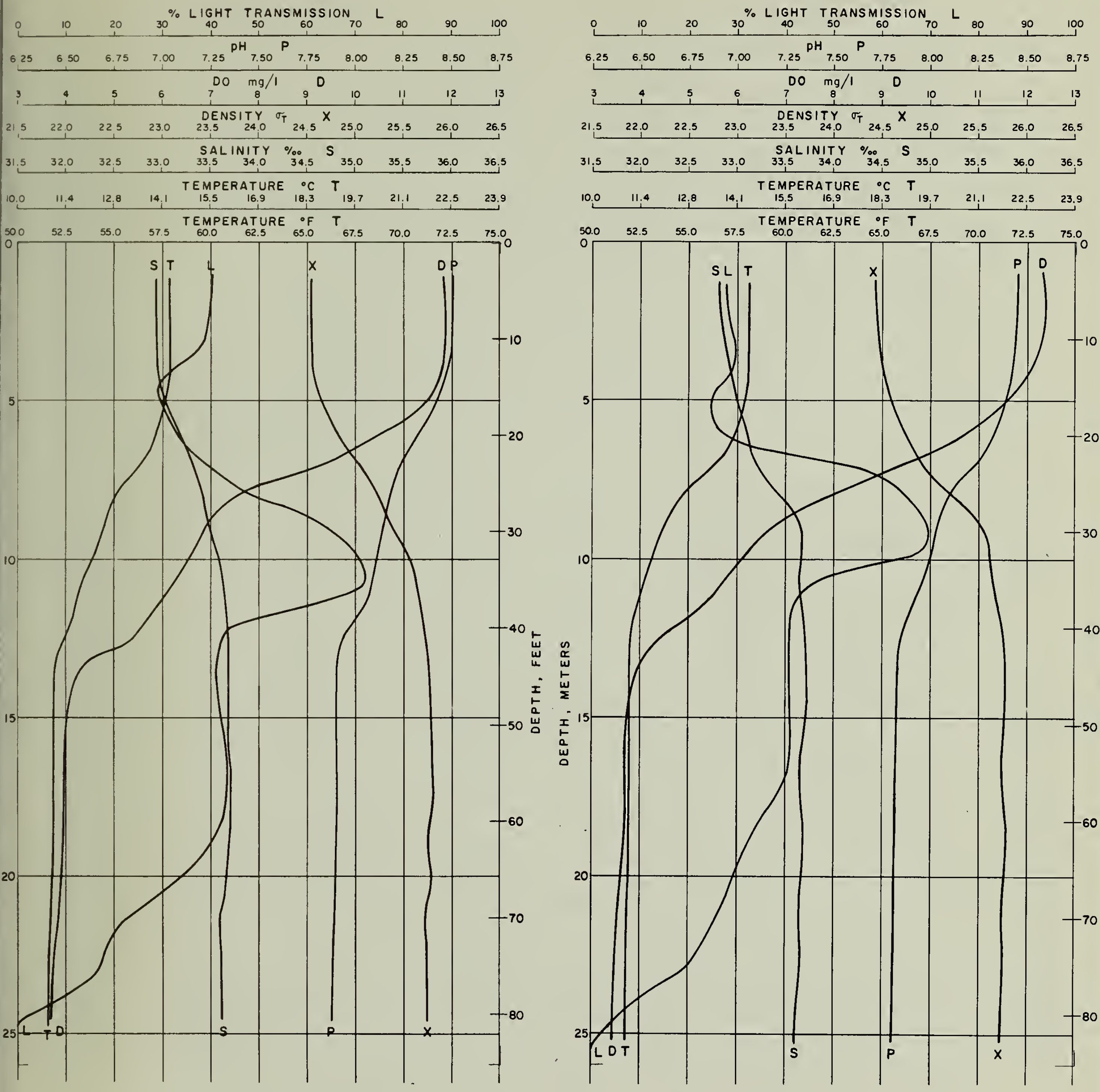
Fig. H-23 Profiles at Station 2



0400 PDT October 4, 1973

0500 PDT October 4, 1973

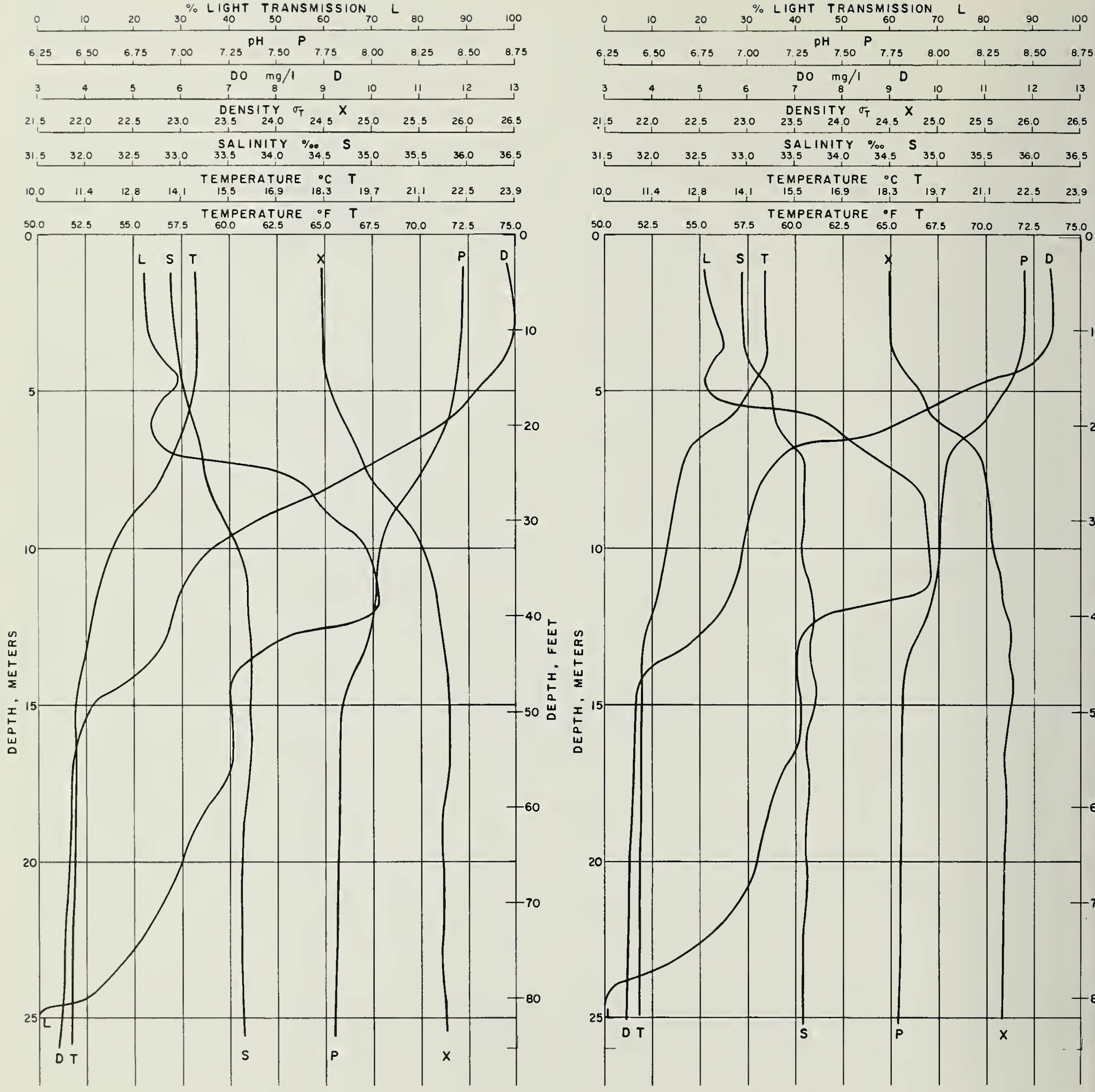
Fig. H-24 Profiles at Station 2



1615 PDT October 4, 1973

0730 PDT October 4, 1973

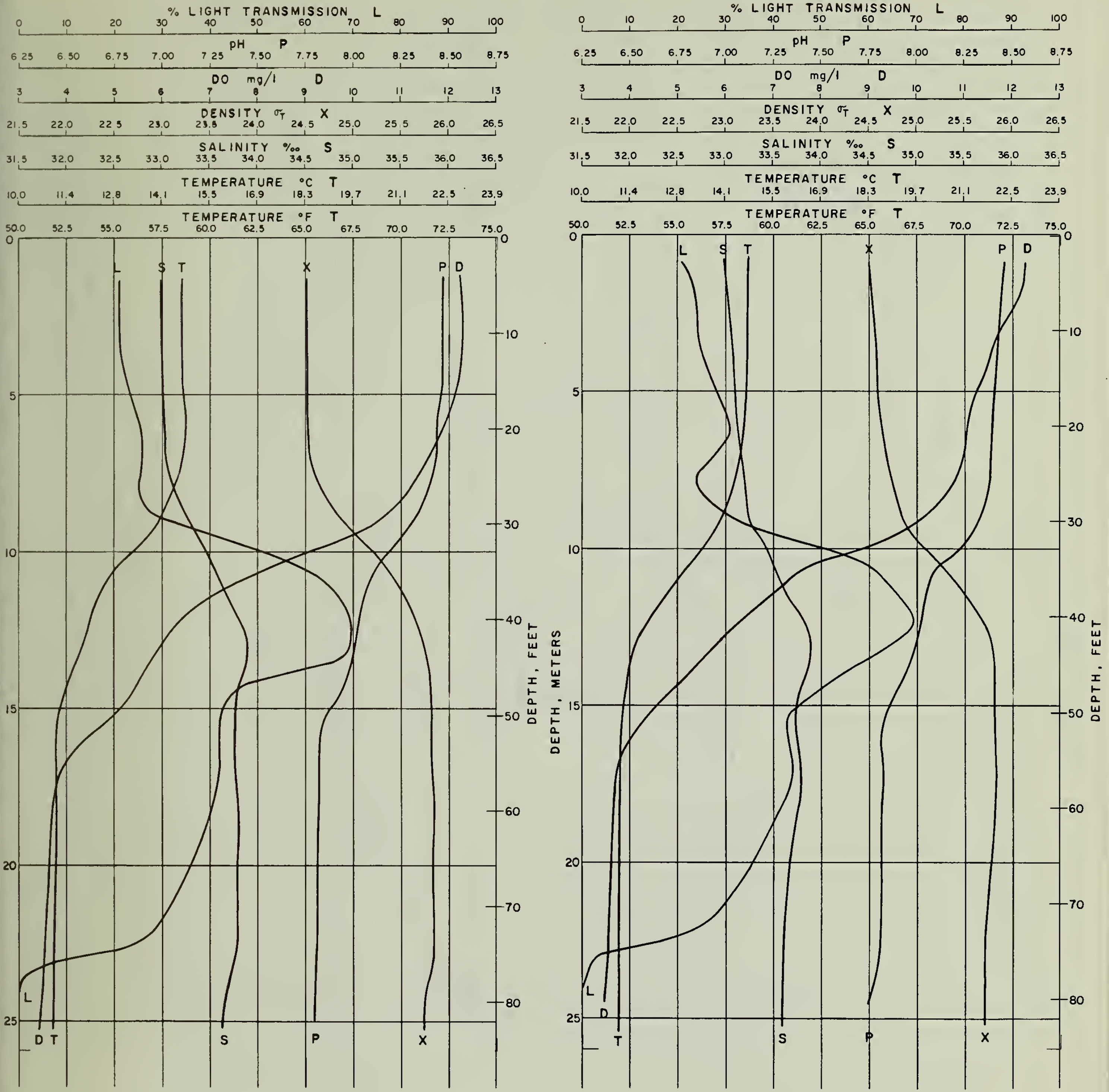
Fig. H-25 Profiles at Station 2



0800 PDT October 4, 1973

0900 PDT October 4, 1973

Fig. H-26 Profiles at Station 2



0930 PDT October 4, 1973

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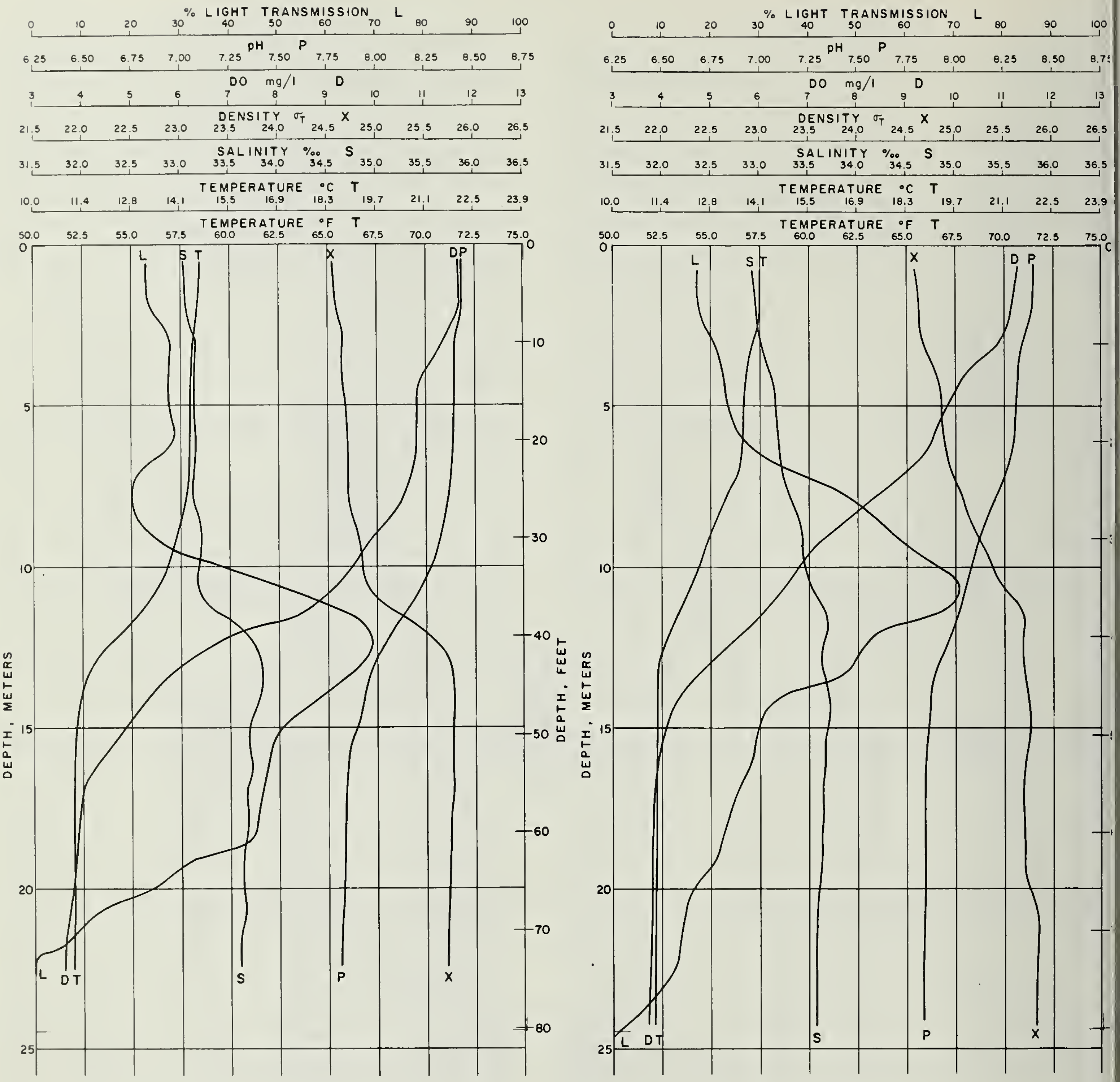
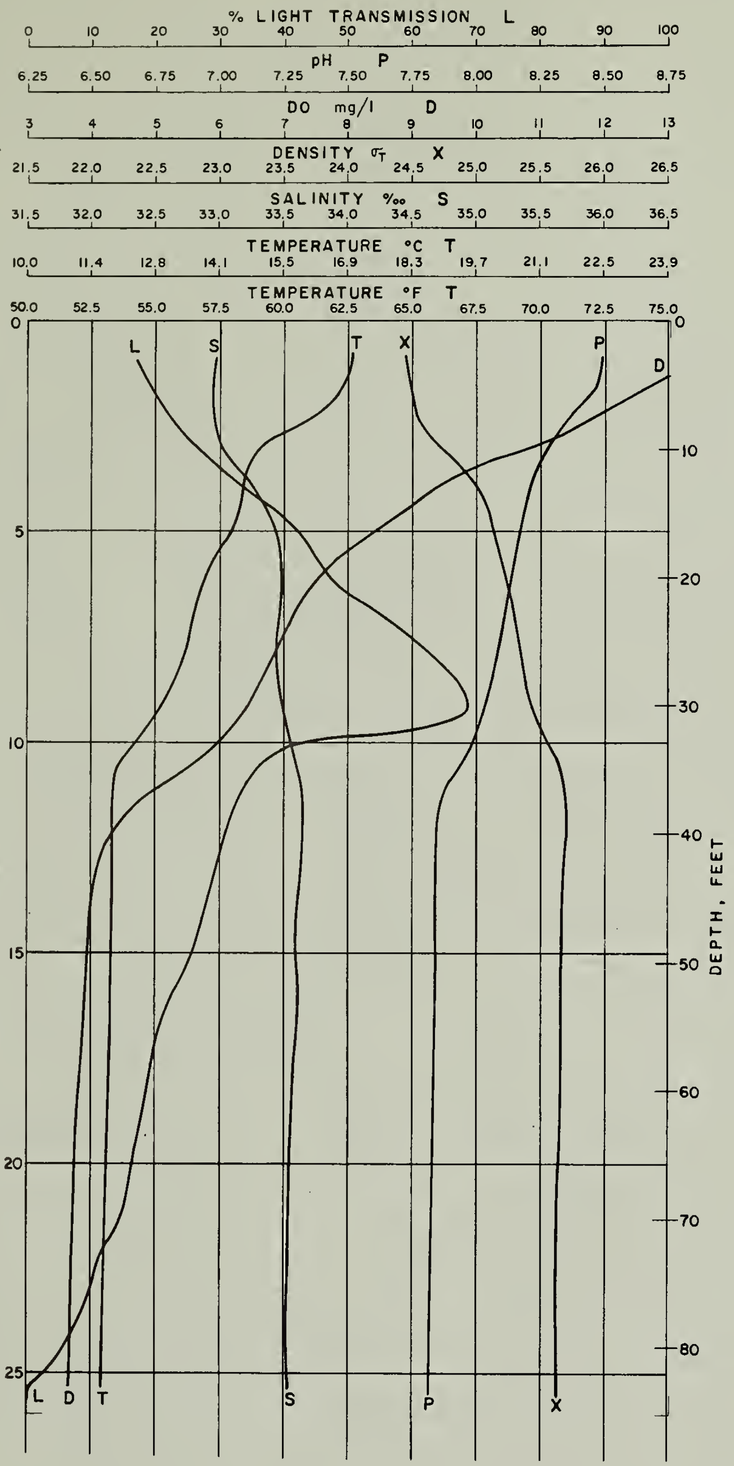
Fig. H-27 Profiles at Station 2



1100 PDT October 4, 1973

1200 PDT October 4, 1973

Fig. H-28 Profiles at Station 2



1300 PDT October 4, 1973

Fig. H-29 Profiles at Station 2

# APPENDIX I

## Benthic Marine Resources at the Proposed Ocean Disposal Site, Gulf of the Farallones

- Trawl Studies
- Benthic Infauna

# Trawl Studies

- Differences in the Catch Composition between a Five-minute and Ten-minute Trawl
- Number of Individuals of Each Species Collected at Each Station
- Length-Weight Relationship
- Heavy Metals and Chlorinated Hydrocarbons in Fishes and Dungeness Crabs

# DIFFERENCES IN THE CATCH COMPOSITION BETWEEN A FIVE-MINUTE AND TEN-MINUTE TRAWL

As discussed in the text, the sampling gear used was a 42-foot crab sampling net. The direction of each trawl was kept constant and the trawl speed ranged from two to three knots depending on variations in the tidal current and direction.

Trawling time was recorded from the time the collecting gear reached bottom and began fishing to the time the winch was started to haul in the net. On the July survey, the trawling time was ten minutes. During this survey, the entire catch of the first six trawls was saved, but because of the enormity of the combined catches, subsamples were taken from the remaining six trawl catches. After consultation with the DFG staff in both Monterey and Menlo Park, the trawl time was shortened to five minutes in the subsequent October 1973 and April 1974 surveys. Analyzing the entire catch of a five-minute trawl was judged superior to the subsampling of a ten-minute trawl, as it would avoid the errors inherent in the subsampling procedure.

The objectives of this study were general in scope and there was not sufficient budget nor time to provide the type of specific sampling necessary to fully investigate whether or not differences in trawl time of this magnitude would have any significant effect on the composition of the catch. However, five-minute and ten-minute trawls were made at Station 41.5-3 in October 1973 and April 1974 to provide some guidance for future monitoring efforts. A comparison of the catches indicates that a greater variety of species was collected in the ten-minute trawl (Table I-1). This is to some degree attributable to the collection of species less commonly caught in the study area or species which inhabit a restricted ecological area. The greater distance traveled in a ten-minute trawl would increase the probability of collecting these species.

Table I-1. Length Frequency of English Sole Collected in Five-Minute and Ten-Minute Trawls at Station 41.5-3.

| Size Class, mm | October 1973 | | | | April 1974 | | | |
|---|---|---|---|---|---|---|---|---|
| | 10 Minute trawl | | 5 Minute trawl | | 10 Minute trawl | | 5 Minute trawl | |
| | No. fish | Percent comp. | No. fish | Percent comp. | No. fish | Percent comp. | No. fish | Percent comp. |
| 0-50 | - | - | - | - | 3 | 0.2 | 1 | 0.2 |
| 60-100 | 509 | 68.6 | 246 | 63.7 | 181 | 12.7 | 55 | 9.5 |
| 110-150 | 158 | 21.3 | 112 | 29.0 | 639 | 45.0 | 233 | 40.5 |
| 160-200 | 6 | 0.8 | 9 | 2.3 | 194 | 13.6 | 119 | 20.7 |
| 210-250 | 33 | 4.4 | 9 | 2.3 | 146 | 10.3 | 79 | 13.7 |
| 260-300 | 30 | 4.0 | 9 | 2.3 | 228 | 16.1 | 86 | 14.9 |
| 310-350 | 6 | 0.9 | 1 | 0.3 | 30 | 2.1 | 3 | 0.5 |
| Total | 742 | - | 386 | - | 1421 | - | 576 | - |

Another difference is found in the comparison of percent composition of the species collected. In October, higher percentages of the more abundant species were found in the ten-minute trawls; however in April almost the reverse was found. The difference in percent composition for the various species in the five-minute and ten-minute trawls is better attributed to spatial distribution of the fishes rather than to the differences in trawl time. There also appears to be little difference in the size of fishes collected. This is demonstrated in the comparison of length frequency distributions for English sole collected in the five-minute and ten-minute trawls in October and those collected in April (Table I-2). Whatever variability there is most likely reflects differences in distribution and the proclivity of many species of fishes to congregate by size or age class.

Table I-2. Fishes Collected in Five-Minute and Ten-Minute Trawls at Station 41.5-3

| Species | October 1973 | | | | | | April 1974 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ten minute trawl | | | Five minute trawl | | | Ten minute trawl | | | Five minute trawl | | |
| | No. fish | Percent comp. | Wt. fish, kg | No. fish | Percent comp. | Wt. fish, kg | No. fish | Percent comp. | Wt. fish, kg | No. fish | Percent comp. | Wt. fish, kg |
| Pacific tomcod | 1895 | 42.6 | 12.0 | 2114 | 49.2 | 17.2 | 69 | 1.7 | 1.4 | 24 | 1.4 | 0.4 |
| English sole | 742 | 16.7 | 32.2 | 386 | 9.0 | 13.2 | 1535 | 38.1 | 162.2 | 576 | 34.5 | 95.6 |
| Speckled sanddab | 270 | 6.1 | 2.9 | 281 | 6.5 | 2.9 | 1045 | 25.9 | 14.8 | 193 | 11.6 | 2.5 |
| Pacific sanddab | 1 | <0.1 | 0.1 | - | - | - | 11 | 0.3 | 1.2 | 6 | 0.4 | 0.5 |
| Whitebait smelt | 30 | 0.7 | 0.2 | 18 | 0.4 | 0.1 | 639 | 15.8 | 1.4 | 409 | 24.5 | 1.5 |
| White croaker | - | - | - | - | - | - | 269 | 6.7 | 45.6 | 1 | 0.1 | T |
| Night smelt | 1022 | 23.0 | 4.5 | 614 | 14.3 | 2.2 | - | - | - | - | - | - |
| Shiner surfperch | 103 | 2.3 | 1.1 | 603 | 14.0 | 7.2 | 174 | 4.3 | 2.0 | 40 | 2.4 | 0.4 |
| Spotfin surfperch | 104 | 2.3 | 1.1 | 125 | 2.9 | 2.3 | 133 | 3.3 | 1.6 | 28 | 1.7 | 0.3 |
| Northern anchovy | - | - | - | 3 | 0.1 | 0.1 | 21 | 0.5 | T | 304 | 18.2 | 0.8 |
| Plainfin midshipman | 20 | 0.4 | T | 11 | 0.2 | T | 24 | 0.6 | 3.0 | 14 | 0.8 | 1.4 |
| Sand sole | 52 | 1.2 | 13.5 | 16 | 0.4 | 3.8 | 55 | 1.4 | 3.2 | 35 | 2.1 | 2.0 |
| Curlfin turbot | 26 | 0.6 | 5.8 | 5 | 0.1 | 1.1 | 9 | 0.2 | 2.2 | 12 | 0.7 | 2.3 |
| Staghorn sculpin | 98 | 2.2 | 8.0 | 75 | 1.7 | 5.5 | 17 | 0.4 | 1.2 | 7 | 0.4 | 0.5 |
| Big skate | - | 0.2 | 13.7 | 9 | 0.2 | 8.2 | 2 | <0.1 | 0.1 | 12 | 0.7 | 8.4 |
| White surfperch | 12 | 0.2 | 0.3 | 27 | 0.6 | 0.6 | - | - | - | - | - | - |
| Spiny dogfish | - | - | - | - | - | - | 2 | <0.1 | 3.0 | - | - | - |
| Pacific herring | 32 | 0.7 | 0.2 | - | - | - | 6 | 0.1 | 0.1 | - | - | - |
| Starry flounder | 1 | <0.1 | 0.5 | - | - | - | 7 | 0.2 | 2.4 | - | - | - |
| Lingcod | 1 | <0.1 | 0.1 | - | - | - | - | - | - | 1 | 0.1 | T |
| Brown rockfish | 11 | 0.2 | 8.3 | - | - | - | - | - | - | 1 | 0.1 | 0.2 |
| Pacific butterfish | 1 | <0.1 | T | - | - | - | 4 | 0.1 | 0.2 | - | - | - |
| California tonguefish | 6 | 0.1 | 0.1 | 2 | <0.1 | T | - | - | - | - | - | - |
| Longfin smelt | - | - | - | 2 | <0.1 | T | - | - | - | - | - | - |
| Brown smoothhound | - | - | - | - | - | - | - | - | - | 1 | 0.1 | 0.9 |
| Spotted cusk-eel | - | - | - | - | - | - | 1 | <0.1 | <0.1 | - | - | - |
| Pricklebreast poacher | - | - | - | - | - | - | 3 | <0.1 | <0.1 | 5 | 0.3 | T |
| Rock sole | - | - | - | - | - | - | 2 | <0.1 | 0.2 | - | - | - |
| Warty poacher | - | - | - | - | - | - | 1 | <0.1 | <0.1 | - | - | - |
| Leopard shark | - | - | - | - | - | - | 1 | <0.1 | 3.1 | - | - | - |
| Showy snailfish | - | - | - | - | - | - | 1 | <0.1 | 0.1 | 1 | 0.1 | T |
| Total | 4436 | - | 104.8 | 4291 | - | 64.3 | 4031 | - | 249.1 | 1670 | - | 117.9 |
| Total number of species | 20 species | | | 16 species | | | 24 species | | | 19 species | | |

Trace (T) represents values comprising less than 0.1 kg.

# Table I-3. Total Number of Individuals of Each Species of Fish Collected at Each Station in July 1973

| Species | Station 43-1 No. | 43-1 Wt. kg | 44-3 No. | 44-3 Wt. kg | 44-5 No. | 44-5 Wt. kg | 41-2 No. | 41-2 Wt. kg | 41.5-3 No. | 41.5-3 Wt. kg | 43-4 No. | 43-4 Wt. kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spiny dogfish | 1 | 0.4 | 1 | 0.8 | 1 | 0.8 | 13 | 17.3 | 10 | 6.9 | 8 | 4.2 |
| Brown smoothhound | - | - | 1 | 0.8 | - | - | - | - | - | - | - | - |
| Pacific electric ray | - | - | - | - | 1 | 2.7 | - | - | - | - | - | - |
| Big skate | 8 | 9.7 | 13 | 9.8 | 11 | 0.9 | 3 | 4.5 | 16 | 7.2 | 3 | 0.7 |
| California skate | - | - | - | - | - | - | - | - | - | - | - | - |
| Green sturgeon | - | - | 1 | 2.4 | - | - | - | - | - | - | - | - |
| Pacific herring | 1 | T | - | - | 24 | 0.3 | 10 | T | - | - | 117 | 0.6 |
| Northern anchovy | 1 | T | - | - | - | - | 8 | T | 71 | 1.1 | 130 | 1.3 |
| Night smelt | 45 | 0.3 | - | - | 11 | 0.1 | - | - | 326 | 1.0 | 96 | 0.2 |
| Plainfin midshipman | 2 | 0.1 | 3 | 0.1 | 12 | 1.6 | 2 | 0.1 | 8 | 0.5 | 4 | 0.2 |
| Spotted cusk-eel | - | - | - | - | - | - | - | - | 3 | 0.1 | - | - |
| Pacific hake | - | - | - | - | - | - | 1 | 0.7 | - | - | - | - |
| Pacific tomcod | 91 | 1.9 | 339 | 3.8 | 398 | 2.2 | 396 | 1.7 | 1,063 | 5.2 | 289 | 1.2 |
| Brown rockfish | - | - | - | - | - | - | - | - | 8 | 3.2 | - | - |
| Longspine combfish | - | - | - | - | - | - | - | - | - | - | - | - |
| Lingcod | 3 | T | - | - | 5 | 0.1 | - | - | 2 | 0.3 | - | - |
| Staghorn sculpin | 16 | 0.9 | 19 | 1.4 | 15 | 1.0 | 29 | 2.9 | 22 | 2.3 | 6 | 0.5 |
| Warty poacher | - | - | - | - | - | - | - | - | 1 | T | - | - |
| Pricklebreast poacher | - | - | - | - | 3 | T | - | - | - | - | - | - |
| Pygmy poacher | - | - | - | - | 1 | - | - | - | - | - | - | - |
| White croaker | 5 | 0.4 | 53 | 10.7 | 4 | 0.7 | 26 | 2.5 | 51 | 5.7 | 10 | 1.1 |
| Pink surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| Spotfin surfperch | 33 | 0.2 | 49 | 0.9 | 100 | 1.5 | 45 | 0.6 | 9 | 0.2 | 19 | 0.2 |
| Shiner surfperch | 2 | T | 2 | 0.1 | 1 | T | 1 | T | - | - | 8 | 0.2 |
| Pile surfperch | - | - | 17 | 3.3 | - | - | - | - | - | - | - | - |
| White surfperch | 3 | 0.2 | 39 | 5.2 | 1 | 0.2 | - | - | - | - | 1 | 0.1 |
| Pacific sandlance | - | - | - | - | - | - | - | - | 1 | T | - | - |
| Pacific butterfish | 4 | 0.1 | - | - | 1 | T | 1 | T | 1 | T | 4 | T |
| California tonguefish | - | - | - | - | - | - | - | - | - | - | - | - |
| California halibut | - | - | 2 | 14.1 | - | - | - | - | - | - | - | - |
| Pacific sanddab | - | - | 1 | 0.1 | 6 | 0.5 | - | - | 154 | 6.3 | 50 | 0.7 |
| Speckled sanddab | 186 | 1.3 | 271 | 1.9 | 439 | 3.3 | 466 | 4.7 | 698 | 7.3 | 82 | 0.5 |
| Rock sole | - | - | 1 | 0.4 | - | - | - | - | - | - | - | - |
| Curlfin turbot | 94 | 11.7 | 25 | 5.0 | 17 | 2.9 | 63 | 8.4 | 55 | 7.6 | 5 | 0.4 |
| Hornyhead turbot | - | - | - | - | - | - | - | - | 1 | T | 1 | T |
| Sand sole | 16 | 5.9 | 48 | 1.0 | 60 | 8.0 | 26 | 8.5 | 28 | 5.8 | 10 | 1.9 |
| English sole | 975 | 72.5 | 572 | 24.3 | 1,036 | 15.9 | 557 | 81.1 | 1,265 | 137.2 | 504 | 25.2 |
| Starry flounder | 3 | 3.3 | 25 | 21.7 | 5 | 5.5 | - | - | - | - | 1 | 0.4 |
| Rex sole | - | - | - | - | - | - | - | - | 4 | 0.6 | - | - |
| Dover sole | - | - | - | - | - | - | - | - | 1 | 0.2 | - | - |
| Petrale sole | - | - | - | - | - | - | 1 | 0.4 | 3 | 0.7 | - | - |
| Total | 1,489 | 109.0 | 1,482 | 107.8 | 2,152 | 48.1 | 1,648 | 133.5 | 3,901 | 199.5 | 1,348 | 39.7 |
| Aliquot | 50% | 50% | 50% | 50% | 100% | 100% | 50% | 50% | 43% | 43% | 100% | 100% |

Trace (T) represents a weight less than .01 kg

## Table I-3. Total Number of Individuals of Each Species of Fish Collected at Each Station in July 1973 (continued)

| Species | Station | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40-6 | | 41-5 | | 42-6 | | 39-4 | | 40-3 | | 40-4 | |
| | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg |
| Spiny dogfish | 2 | 1.4 | 9 | 3.9 | 6 | 2.9 | 27 | 17.1 | 11 | 6.5 | 16 | 2.8 |
| Brown smoothhound | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific electric ray | - | - | - | - | - | - | - | - | - | - | - | - |
| Big skate | 9 | 4.8 | 13 | 2.4 | 8 | 1.6 | 38 | 39.4 | 11 | 22.8 | 2 | 0.4 |
| California skate | 2 | 2.3 | - | - | 1 | 2.7 | - | - | - | - | - | - |
| Green sturgeon | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific herring | - | - | - | - | 2 | 0.1 | - | - | 2 | T | - | - |
| Northern anchovy | 5 | 0.1 | 2 | T | 13 | 0.2 | 39 | 0.6 | - | - | 6 | 0.1 |
| Night smelt | 19 | 0.1 | 15 | 0.1 | - | - | 32 | 0.1 | 85 | 0.3 | 14 | 0.1 |
| Plainfin midshipman | 19 | 1.6 | 13 | 0.7 | 17 | 1.4 | 9 | 0.4 | 10 | 0.8 | 7 | 0.3 |
| Spotted cusk-eel | - | - | 1 | T | - | - | - | - | - | - | - | - |
| Pacific hake | 6 | 13.0 | 2 | 1.6 | 5 | 3.9 | 19 | 22.2 | 1 | 0.9 | 3 | 3.6 |
| Pacific tomcod | 740 | 4.1 | 800 | 4.3 | 1,321 | 3.3 | 1,475 | 5.4 | 3,385 | 8.6 | 13 | 0.5 |
| Brown rockfish | 1 | 0.6 | - | - | 3 | 1.4 | 8 | 4.8 | 1 | 0.1 | 4 | 2.4 |
| Longspine combfish | 4 | 0.2 | - | - | - | - | - | - | - | - | - | - |
| Lingcod | 10 | 0.1 | 10 | 0.1 | - | - | 6 | T | 2 | T | 2 | T |
| Staghorn sculpin | 7 | 0.7 | 16 | 1.8 | 14 | 1.5 | 29 | 4.1 | 38 | 4.5 | 14 | 2.0 |
| Warty poacher | - | - | - | - | - | - | - | - | - | - | - | - |
| Pricklebreast poacher | - | - | - | - | - | - | - | - | - | - | - | - |
| Pygmy poacher | - | - | 1 | T | - | - | - | - | - | - | - | - |
| White croaker | 10 | 1.3 | 17 | 2.3 | 5 | 0.7 | 176 | 26.5 | 51 | 6.0 | 12 | 1.8 |
| Pink surfperch | 2 | 0.1 | 1 | T | - | - | - | - | - | - | - | - |
| Spotfin surfperch | 1 | T | 2 | T | 3 | 0.1 | 14 | 0.2 | 17 | 0.2 | 7 | 0.1 |
| Shiner surfperch | 1 | T | 1 | T | - | - | 1 | T | 1 | T | - | - |
| Pile surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| White surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific sandlance | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific butterfish | 1 | T | 2 | T | - | - | 7 | 0.1 | 5 | T | - | - |
| California tonguefish | - | - | - | - | - | - | 1 | T | - | - | - | - |
| California halibut | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific sanddab | 666 | 89.8 | 822 | 10.7 | 511 | 43.1 | 747 | 97.3 | 163 | 22.9 | 434 | 56.6 |
| Speckled sanddab | 962 | 12.4 | 402 | 3.3 | 1,085 | 8.7 | 739 | 9.3 | 680 | 8.2 | 408 | 4.2 |
| Rock sole | - | - | - | - | - | - | - | - | - | - | - | - |
| Curlfin turbot | 25 | 3.1 | 37 | 4.8 | 34 | 4.4 | 46 | 5.6 | 18 | 2.2 | 16 | 1.6 |
| Hornyhead turbot | - | - | - | - | - | - | - | - | 3 | 0.1 | 4 | 0.3 |
| Sand sole | 5 | 1.6 | 10 | 3.1 | 18 | 2.8 | 14 | 4.5 | 14 | 4.0 | 10 | 2.0 |
| English sole | 782 | 44.5 | 756 | 44.9 | 364 | 23.1 | 1,369 | 100.9 | 688 | 73.8 | 587 | 59.5 |
| Starry flounder | - | - | 1 | 0.4 | - | - | - | - | 1 | 0.2 | - | - |
| Rex sole | 23 | 3.8 | 17 | 3.0 | 16 | 2.8 | 9 | 1.4 | 8 | 1.2 | 5 | 0.8 |
| Dover sole | 52 | 10.1 | 18 | 4.4 | 2 | 0.5 | 11 | 3.2 | 11 | 2.1 | 4 | 1.3 |
| Petrale sole | 67 | 9.1 | 48 | 8.0 | 24 | 4.8 | 189 | 32.0 | 22 | 3.9 | 22 | 3.7 |
| Total | 3,421 | 204.8 | 3,016 | 99.9 | 3,562 | 109.9 | 5,005 | 375.5 | 5,228 | 169.5 | 1,590 | 144.2 |
| Aliquot | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 40% | 40% | 25% | 25% |

Trace (T) represents a weight less than 0.01 kg.

## Table I-4. Total Number of Individuals of Each Species of Fish Collected at Each Station in October 1973

| | Station | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 43-1 | | 44-3 | | 44-5 | | 41-2 | | 41.5-3 | | 43-4 | |
| Species | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg |
| Spiny dogfish | - | - | - | - | - | - | - | - | - | - | 1 | 0.8 |
| Brown smoothhound | - | - | - | - | - | - | 2 | 0.9 | - | - | - | - |
| Big skate | 8 | 3.2 | - | - | 5 | 0.6 | 4 | 3.2 | 9 | 8.2 | 2 | 3.6 |
| Bat ray | - | - | - | - | - | - | - | - | - | - | 1 | 9.1 |
| Pacific herring | 7 | T | - | - | - | - | 3 | T | - | - | - | - |
| Northern anchovy | 1 | T | - | - | - | - | 6 | 0.1 | 3 | 0.1 | 21 | 0.4 |
| Night smelt | 261 | 0.8 | - | - | 3 | T | 738 | 3.0 | 614 | 2.2 | 45 | 0.1 |
| Whitebait smelt | - | - | 4 | T | - | - | 2 | T | 18 | 0.1 | - | - |
| Longfin smelt | - | - | - | - | - | - | 46 | 0.2 | 2 | T | 1 | T |
| Plainfin midshipman | - | - | - | - | 256 | 0.3 | 10 | 0.1 | 11 | T | 981 | 1.9 |
| Spotted cusk-eel | - | - | - | - | 2 | T | - | - | - | - | 2 | T |
| Pacific tomcod | 308 | 2.7 | 395 | 8.5 | 746 | 6.7 | 391 | 2.9 | 2,114 | 17.2 | 700 | 11.1 |
| Bay pipefish | - | - | - | - | - | - | - | - | - | - | 1 | T |
| Lingcod | - | - | - | - | - | - | - | - | - | - | - | - |
| Staghorn sculpin | 12 | 0.5 | 4 | 0.2 | 48 | 3.5 | 24 | 1.3 | 75 | 5.5 | 28 | 2.6 |
| Warty poacher | - | - | - | - | 3 | T | - | - | - | - | 4 | T |
| Pricklebreast poacher | - | - | - | - | - | - | - | - | - | - | 4 | T |
| Showy snailfish | - | - | - | - | - | - | - | - | - | - | 5 | 0.1 |
| White croaker | 1 | 0.2 | 1 | T | 3 | 0.1 | 28 | 2.8 | - | - | 2,490 | 67.3 |
| Rubberlip surfperch | - | - | 2 | 0.2 | - | - | - | - | - | - | - | - |
| Spotfin surfperch | 272 | 1.2 | 53 | 0.5 | 32 | 0.3 | 1,236 | 2.4 | 125 | 2.3 | 39 | 0.8 |
| Shiner surfperch | 5 | T | 34 | 0.4 | 89 | 1.0 | 353 | 3.6 | 603 | 7.2 | 814 | 9.5 |
| Pile surfperch | - | - | 6 | 0.4 | - | - | - | - | - | - | - | - |
| White surfperch | 3 | 0.2 | 153 | 13.0 | - | - | 10 | 0.2 | 27 | 0.6 | 14 | 0.3 |
| Pacific butterfish | - | - | - | - | - | - | - | - | - | - | - | - |
| California tonguefish | 1 | T | 1 | T | 1 | T | 2 | T | 2 | T | 32 | 0.5 |
| California halibut | 1 | 2.1 | - | - | - | - | - | - | - | - | - | - |
| Pacific sanddab | 1 | 0.1 | 4 | 0.5 | 7 | 0.5 | - | - | - | - | 1 | 0.1 |
| Speckled sanddab | 77 | 0.9 | 13 | 0.1 | 1,034 | 7.3 | 217 | 1.6 | 281 | 2.9 | 742 | 8.1 |
| Rock sole | - | - | 1 | 0.2 | - | - | - | - | - | - | - | - |
| Curlfin turbot | 9 | 1.5 | 3 | 0.6 | 22 | 3.2 | 16 | 2.9 | 5 | 1.1 | - | - |
| Hornyhead turbot | - | - | - | - | - | - | - | - | - | - | - | - |
| Sand sole | 22 | 9.3 | 15 | 3.6 | 95 | 6.0 | 46 | 13.6 | 16 | 3.8 | 8 | 1.3 |
| English sole | 73 | 15.4 | 1 | T | 299 | 16.5 | 732 | 86.2 | 386 | 13.2 | 96 | 7.1 |
| Starry flounder | 3 | 2.6 | 19 | 18.0 | 1 | 0.5 | 3 | 1.1 | - | - | - | - |
| Petrale sole | - | - | 1 | 0.3 | - | - | - | - | - | - | - | - |
| Total | 1,065 | 40.9 | 710 | 46.6 | 2,646 | 46.8 | 3,869 | 127.4 | 4,291 | 64.3 | 6,032 | 124.8 |

Trace (T) represents a weight less than .01 kg

## Table I-4. Total Number of Individuals of Each Species of Fish Collected at Each Station in October 1973 (continued)

| Species | Station | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40-6 | | 41-5 | | 42-6 | | 39-4 | | 40-3 | | 40-4 | |
| | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg |
| Spiny dogfish | - | - | - | - | 1 | 0.1 | - | - | - | - | - | - |
| Brown smoothhound | - | - | - | - | - | - | - | - | - | - | - | - |
| Big skate | 7 | 2.2 | 6 | 4.3 | 6 | 5.2 | 1 | T | 2 | 0.7 | - | - |
| Bat ray | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific herring | - | - | 9 | T | - | - | - | - | 2 | T | - | - |
| Norther anchovy | 3 | T | - | - | - | - | - | - | - | - | 1 | T |
| Night smelt | 2 | T | 231 | 14.5 | 9 | 0.1 | 10 | T | 8 | T | 49 | 0.2 |
| Whitebait smelt | - | - | 5 | T | - | - | - | - | 2 | T | 7 | T |
| Longfin smelt | - | - | - | - | - | - | - | - | - | - | 2 | T |
| Plainfin midshipman | - | - | 3 | T | 4 | T | - | - | 4 | T | 8 | T |
| Spotted cusk-eel | - | - | - | - | 1 | T | - | - | - | - | - | - |
| Pacific tomcod | 189 | 1.0 | 519 | 3.2 | 22 | 0.1 | 54 | 0.4 | 162 | 1.0 | 163 | 1.1 |
| Bay pipefish | - | - | - | - | - | - | - | - | - | - | - | - |
| Lingcod | - | - | - | - | - | - | - | - | - | - | 1 | T |
| Staghorn sculpin | 60 | 4.3 | 71 | 4.0 | 21 | 1.6 | 14 | 1.1 | 23 | 1.8 | 11 | 0.7 |
| Warty poacher | - | - | - | - | - | - | - | - | - | - | - | - |
| Pricklebreast poacher | - | - | - | - | - | - | - | - | - | - | - | - |
| Showy snailfish | - | - | - | - | - | - | - | - | - | - | - | - |
| White croaker | - | - | - | - | 4 | 0.1 | - | - | - | - | - | - |
| Rubberlip surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| Spotfin surfperch | - | - | 2 | T | - | - | - | - | - | - | 1 | T |
| Shiner surfperch | 3 | T | 1 | T | 6 | 0.1 | 3 | T | - | - | 5 | T |
| Pile surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| White surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific butterfish | 2 | T | - | - | - | - | - | - | - | - | - | - |
| California tonguefish | 4 | 0.1 | 1 | T | 2 | T | - | - | 1 | T | 1 | T |
| California halibut | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific sanddab | 186 | 10.1 | 55 | 5.5 | 49 | 5.8 | 3 | 0.2 | 1 | 0.1 | 4 | 0.3 |
| Speckled sanddab | 435 | 3.6 | 219 | 2.3 | 217 | 2.4 | 72 | 0.8 | 269 | 3.1 | 141 | 1.5 |
| Rock sole | - | - | - | - | - | - | - | - | - | - | - | - |
| Curlfin turbot | 17 | 3.0 | 8 | 1.4 | 9 | 1.5 | 6 | 0.8 | 46 | 9.7 | 5 | 0.7 |
| Hornyhead turbot | - | - | 2 | 0.2 | 1 | 0.1 | 1 | 0.1 | 12 | 1.1 | - | - |
| Sand sole | 13 | 1.3 | 22 | 2.9 | 43 | 5.8 | - | - | 13 | 3,2 | 2 | 0.3 |
| English sole | 1,118 | 28.0 | 722 | 16.2 | 844 | 17.9 | 41 | 1.0 | 748 | 22.9 | 167 | 7.6 |
| Starry flounder | 1 | 1.3 | 1 | 0.4 | - | - | - | - | - | - | - | - |
| Petrale sole | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 2,040 | 47.1 | 1,877 | 42.4 | 1,239 | 40.6 | 205 | 4.6 | 1,293 | 43.8 | 568 | 12.7 |

Trace (T) represents a weight less than 0.01 kg.

## Table I-5. Total Number of Individuals of Each Species of Fish Collected at Each Station in April 1974

| Species | Station | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 43-1 | | 44-3 | | 44-5 | | 41-2 | | 41.5-3 | | 43-4 | |
| | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg |
| Spiny dogfish | - | - | - | - | - | - | 1 | 2.0 | - | - | - | - |
| Brown smoothhound | - | - | - | - | - | - | 24 | 35.4 | 1 | 0.9 | - | - |
| Leopard shark | - | - | 6 | 17.1 | - | - | 1 | 4.9 | - | - | - | - |
| Bat ray | 10 | 28.1 | - | - | 1 | 5.5 | - | - | - | - | - | - |
| Big skate | 1 | 0.4 | 1 | 0.3 | 23 | 12.9 | 13 | 9.9 | 12 | 8.4 | - | - |
| Northern anchovy | - | - | 5 | 0.1 | 43 | 0.6 | 2 | T | 304 | 0.8 | - | - |
| Pacific herring | 1 | T | 4 | 0.2 | - | - | - | - | - | - | - | - |
| Whitebait smelt | 58 | 0.1 | - | - | 500 | 1.1 | 7 | T | 409 | 1.5 | 13 | T |
| Pacific tomcod | - | - | 6 | 0.1 | 344 | 8.4 | 209 | 5.1 | 24 | 0.4 | 1 | T |
| Brown rockfish | - | - | - | - | - | - | 5 | 3.9 | 1 | 0.2 | - | - |
| Lingcod | 6 | T | - | - | - | - | - | - | 1 | T | - | - |
| White croaker | 23 | 4.6 | 8 | 0.7 | 363 | 6.0 | 676 | 49.8 | 1 | T | - | - |
| Staghorn sculpin | 6 | 0.4 | 11 | 0.7 | 16 | 1.2 | 6 | 0.5 | 7 | 0.5 | 10 | 0.5 |
| Plainfin midshipman | 22 | 2.0 | 1 | T | 7 | 0.7 | 3 | 0.3 | 14 | 1.4 | 5 | 0.3 |
| Showy snailfish | - | - | - | - | - | - | - | - | 1 | T | - | - |
| Pricklebreast poacher | - | - | - | - | - | - | - | - | 5 | T | - | - |
| Pacific butterfish | 3 | T | - | - | - | - | - | - | - | - | - | - |
| Spotted cusk-eel | 1 | T | - | - | - | - | - | - | - | - | - | - |
| Shiner surfperch | 229 | 2.6 | 50 | 0.7 | 208 | 3.5 | 7 | 0.1 | 40 | 0.4 | 2 | T |
| Spotfin surfperch | 15 | 0.2 | 18 | 0.3 | - | - | 1 | T | 28 | 0.3 | 2 | T |
| Pile surfperch | - | - | 2 | 0.6 | - | - | - | - | - | - | - | - |
| White surfperch | 3 | 0.2 | 1 | 0.2 | - | - | - | - | - | - | - | - |
| California tonguefish | - | - | - | - | - | - | - | - | - | - | - | - |
| California halibut | - | - | - | - | - | - | 1 | 0.3 | - | - | - | - |
| Pacific sanddab | - | - | - | - | - | - | - | - | 6 | 0.5 | 2 | 0.2 |
| Speckled sanddab | 135 | 1.7 | 12 | 0.1 | 324 | 4.0 | 26 | 0.3 | 193 | 2.5 | 89 | 1.0 |
| Rock sole | - | - | - | - | - | - | 3 | 0.4 | - | - | - | - |
| Curlfin turbot | 9 | 2.1 | - | - | 15 | 2.0 | - | - | 12 | 2.3 | - | - |
| Hornyhead turbot | - | - | - | - | - | - | - | - | - | - | - | - |
| Sand sole | 13 | 6.1 | 33 | 4.0 | 24 | 1.8 | 9 | 1.0 | 35 | 2.0 | 9 | 0.2 |
| English sole | 60 | 9.4 | 27 | 25.5 | 205 | 25.5 | 69 | 13.7 | 576 | 95.6 | 21 | 0.7 |
| Rex sole | - | - | - | - | - | - | - | - | - | - | - | - |
| Starry flounder | 8 | 2.7 | - | 0.3 | 1 | 0.3 | - | - | - | - | - | - |
| Total | 603 | 60.9 | 185 | 27.6 | 2,074 | 73.7 | 1,003 | 127.8 | 1,670 | 117.9 | 154 | 3.0 |

Trace (T) represents a weight less than .01 kg

## Table I-5. Total Number of Individuals of Each Species of Fish Collected at Each Station in April 1974 (continued)

| Species | Station | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40-6 | | 41-5 | | 42-6 | | 39-4 | | 40-3 | | 40-4 | |
| | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg | No. | Wt. kg |
| Spiny dogfish | - | - | 1 | 1.0 | - | - | - | - | 1 | 0.3 | - | - |
| Brown smoothhound | 1 | 0.2 | - | - | - | - | - | - | 5 | 6.8 | - | - |
| Leopard shark | - | - | - | - | - | - | - | - | - | - | - | - |
| Bat ray | - | - | - | - | - | - | - | - | 7 | 20.7 | - | - |
| Big skate | 1 | 13.0 | 2 | 24.0 | 20 | 23.4 | 21 | 38.4 | 4 | 10.1 | 9 | 5.5 |
| Northern anchovy | 95 | 0.4 | 249 | 0.7 | 1,106 | 5.9 | 8 | T | 24 | T | - | - |
| Pacific herring | - | - | - | - | - | - | 1 | T | - | - | - | - |
| Whitebait smelt | - | - | 173 | 0.4 | 1,049 | 2.5 | 218 | 0.8 | 2,197 | 3.9 | 357 | 0.9 |
| Pacific tomcod | 33 | 0.7 | 107 | 2.0 | 76 | 1.3 | 78 | 0.3 | 34 | 0.6 | 901 | 1.3 |
| Brown rockfish | 1 | 1.1 | - | - | - | - | 1 | 0.1 | - | - | - | - |
| Lingcod | - | - | - | - | - | - | - | - | - | - | - | - |
| White croaker | 4 | 0.4 | 6 | 0.3 | 8 | 0.4 | - | - | 644 | 31.3 | - | - |
| Staghorn sculpin | 27 | 2.2 | 26 | 2.2 | 9 | 0.8 | 30 | 2.6 | 14 | 1.0 | 16 | 1.4 |
| Plainfin midshipman | 3 | 0.2 | - | - | 1 | 0.1 | 10 | 1.0 | 1 | 0.3 | 11 | 1.3 |
| Showy snailfish | - | - | - | - | - | - | - | - | - | - | - | - |
| Pricklebreast poacher | - | - | - | - | - | - | - | - | - | - | - | - |
| Pacific butterfish | - | - | 8 | 0.1 | 2 | T | - | - | - | - | - | - |
| Spotted cusk-eel | - | - | - | - | - | - | - | - | - | - | - | - |
| Shiner surfperch | 19 | 0.2 | 35 | 0.4 | 72 | 0.8 | 2 | T | 175 | 2.2 | 10 | 0.1 |
| Spotfin surfperch | 18 | 0.2 | 21 | 0.2 | 48 | 0.4 | 25 | 0.1 | 90 | 1.1 | 78 | 0.5 |
| Pile surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| White surfperch | - | - | - | - | - | - | - | - | - | - | - | - |
| California tonguefish | - | - | 1 | T | - | - | - | - | 2 | T | 1 | T |
| California halibut | - | - | - | - | - | - | - | - | 1 | 1.8 | - | - |
| Pacific sanddab | 156 | 10.3 | 32 | 3.1 | - | - | 154 | 10.5 | 2 | 0.2 | 77 | 5.9 |
| Speckled sanddab | 391 | 5.1 | 118 | 1.3 | 42 | 0.4 | 297 | 3.8 | 96 | 1.6 | 333 | 4.3 |
| Rock sole | - | - | - | - | - | - | - | - | 4 | 0.6 | - | - |
| Curlfin turbot | 15 | 2.0 | 8 | 1.5 | 11 | 2.0 | 34 | 5.5 | 2 | 0.5 | 22 | 3.2 |
| Hornyhead turbot | - | - | - | - | 1 | 0.1 | 2 | 0.4 | 2 | 0.8 | 1 | 0.1 |
| Sand sole | 37 | 7.3 | 47 | 6.8 | 19 | 3.2 | 45 | 8.1 | 18 | 4.8 | 51 | 8.2 |
| English sole | 456 | 40.7 | 203 | 21.5 | 193 | 26.3 | 465 | 42.6 | 763 | 171.5 | 612 | 62.3 |
| Rex sole | 1 | 0.2 | - | - | - | - | - | - | - | - | - | - |
| Starry flounder | 1 | 0.3 | - | - | - | - | - | 0.3 | - | - | - | - |
| Total | 1,259 | 84.5 | 1,037 | 65.5 | 2,657 | 67.6 | 1,392 | 114.6 | 4,086 | 260.3 | 2,539 | 95.0 |

Trace (T) represents a weight less than 0.01 kg.

# LENGTH-WEIGHT RELATIONSHIP

Data on the length-weight relationship of a species of fish collected in a particular area is used in fishery research as baseline information on the condition of a particular stock of fish. Information of this type could be of use in future monitoring efforts. Length-weight relationships were calculated for the five species of fish most commonly collected in the Gulf of the Farallones in the 1973-74 trawl surveys: English sole, Pacific tomcod, speckled sanddab, Pacific sanddab, and white croaker.

The following is the commonly accepted formula expressing the length-weight relation in fishes (Brown, Margaret E., The Physiology of Fishes, Academic Press Inc., New York, 1957):

$$W = a\ L^{b}$$

Where $W$ = weight in grams,
$L$ = standard length in centimeters,
$a, b$ = constants.

By conversion to logarithms, the formula is expressed as a linear equation:

$$\text{Log } W = \log a + b \log L$$

Length and weight data were calculated for the fishes collected in the July 1973 survey; length-weight data by sex were calculated for the October 1973 and April 1974 surveys. Length-weight relationships are indicated in Fig. I-1 through I-28.

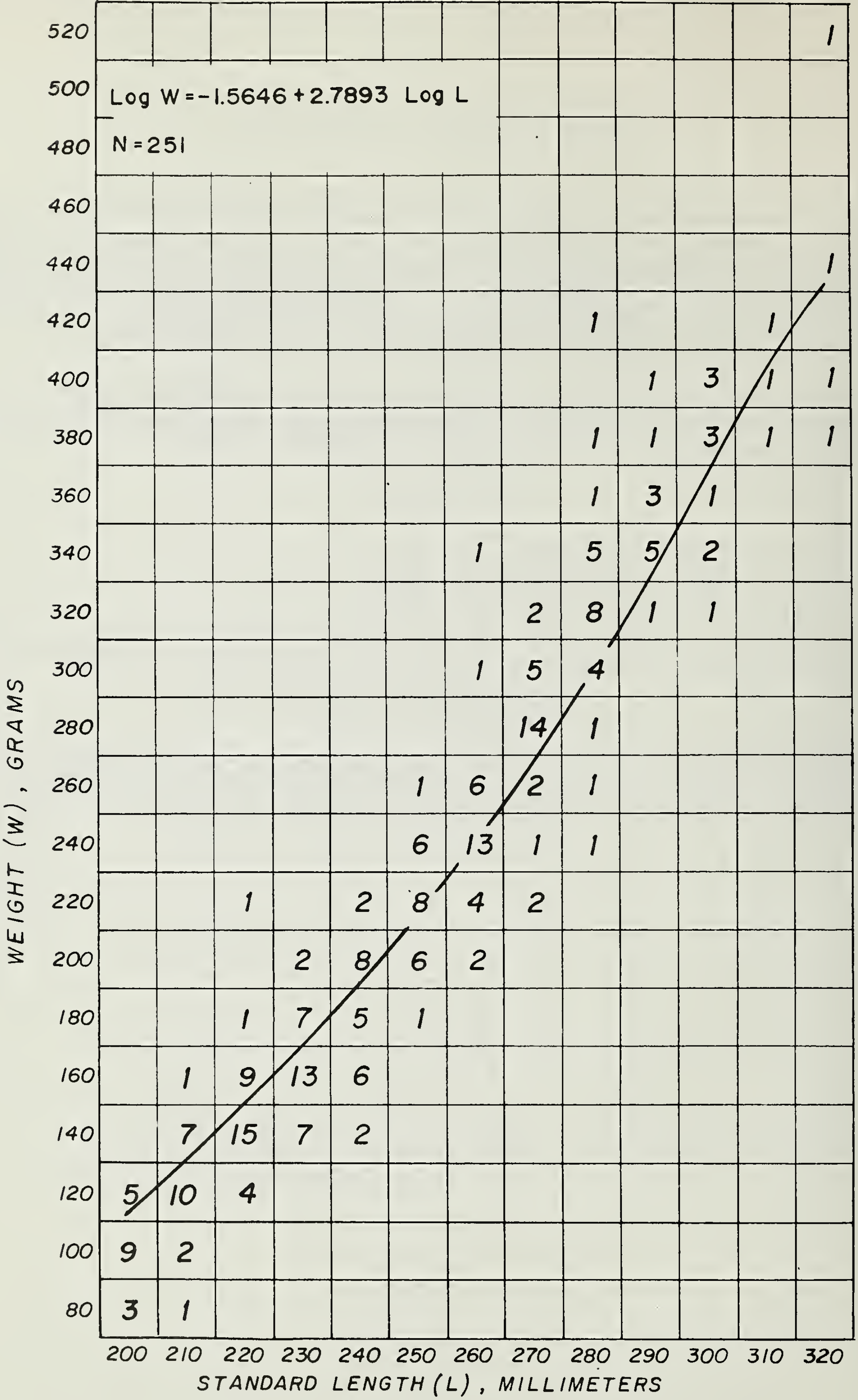


Fig. I-1. Length-Weight Relationship for Adult English Sole Collected in July, 1973, Gulf of the Farallones

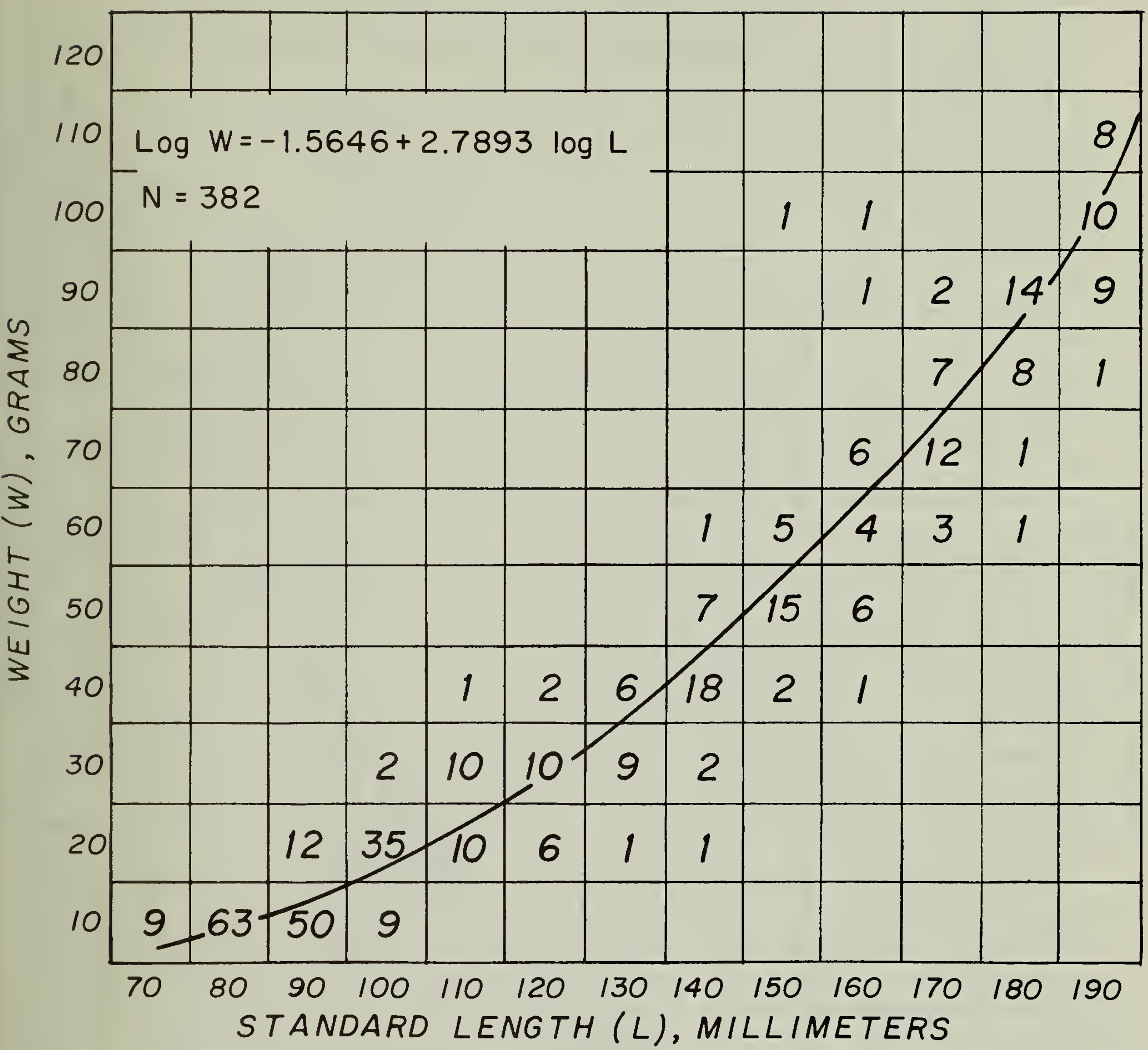
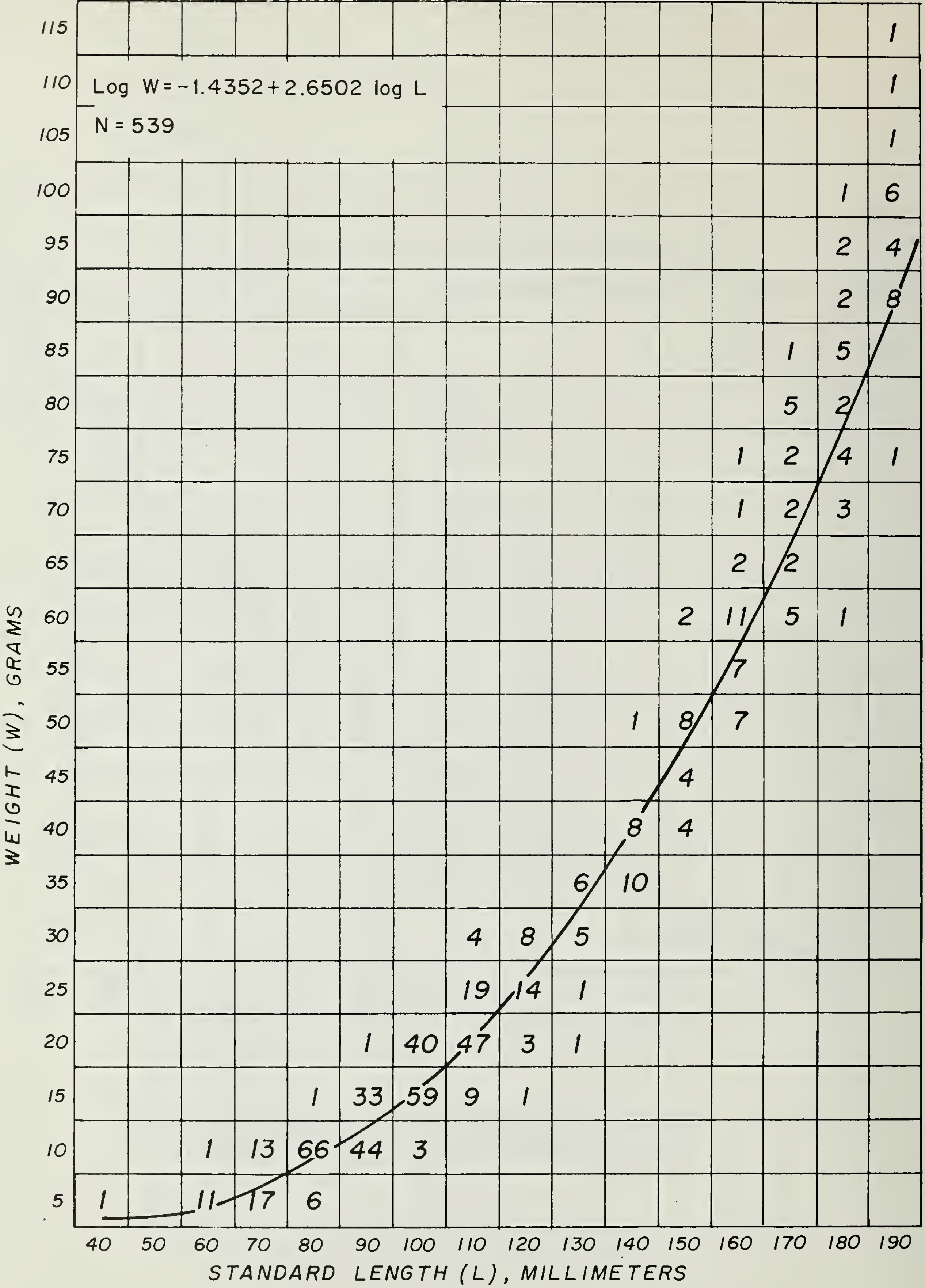


Fig. 1-2. Length-Weight Relationship for Juvenile English Sole Collected in July, 1973, Gulf of the Farallones



| | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 115 | | | | | | | | | | | | | | | | 1 |
| 110 | | | | | | | | | | | | | | | | 1 |
| 105 | | | | | | | | | | | | | | | | 1 |
| 100 | | | | | | | | | | | | | | | 1 | 6 |
| 95 | | | | | | | | | | | | | | | 2 | 4 |
| 90 | | | | | | | | | | | | | | | 2 | 8 |
| 85 | | | | | | | | | | | | | | 1 | 5 | |
| 80 | | | | | | | | | | | | | | 5 | 2 | |
| 75 | | | | | | | | | | | | | 1 | 2 | 4 | 1 |
| 70 | | | | | | | | | | | | | 1 | 2 | 3 | |
| 65 | | | | | | | | | | | | | 2 | 2 | | |
| 60 | | | | | | | | | | | | 2 | 11 | 5 | 1 | |
| 55 | | | | | | | | | | | | | 7 | | | |
| 50 | | | | | | | | | | | 1 | 8 | 7 | | | |
| 45 | | | | | | | | | | | | 4 | | | | |
| 40 | | | | | | | | | | | 8 | 4 | | | | |
| 35 | | | | | | | | | | 6 | 10 | | | | | |
| 30 | | | | | | | | 4 | 8 | 5 | | | | | | |
| 25 | | | | | | | | 19 | 14 | 1 | | | | | | |
| 20 | | | | | | 1 | 40 | 47 | 3 | 1 | | | | | | |
| 15 | | | | | 1 | 33 | 59 | 9 | 1 | | | | | | | |
| 10 | | | 1 | 13 | 66 | 44 | 3 | | | | | | | | | |
| 5 | 1 | | 11 | 17 | 6 | | | | | | | | | | | |

Fig. I-3. Length-Weight Relationship for Juvenile English Sole Collected in October, 1973, Gulf of the Farallones

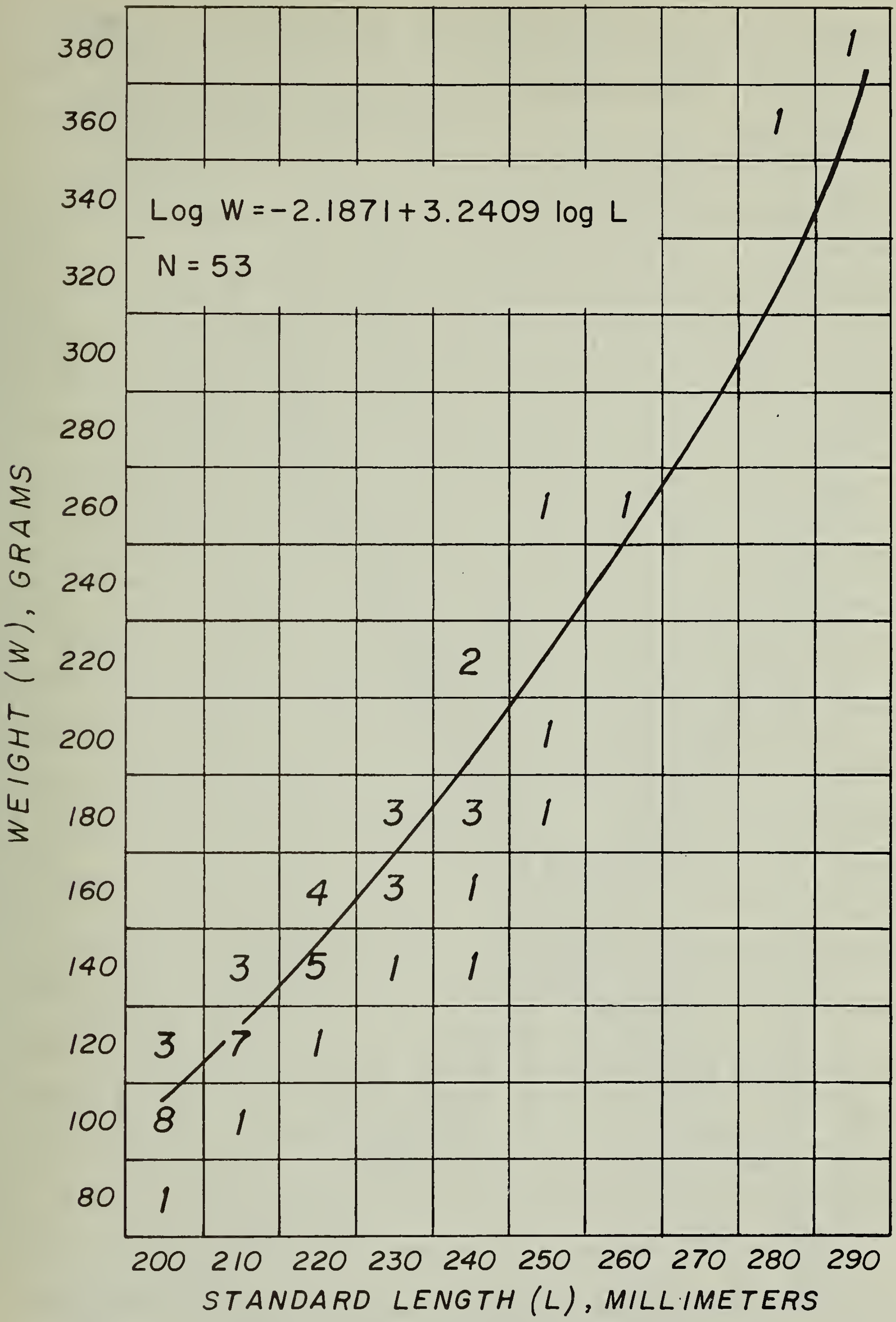


Fig. I-4. Length-Weight Relationship for Male English Sole Collected in October, 1973, Gulf of the Farallones

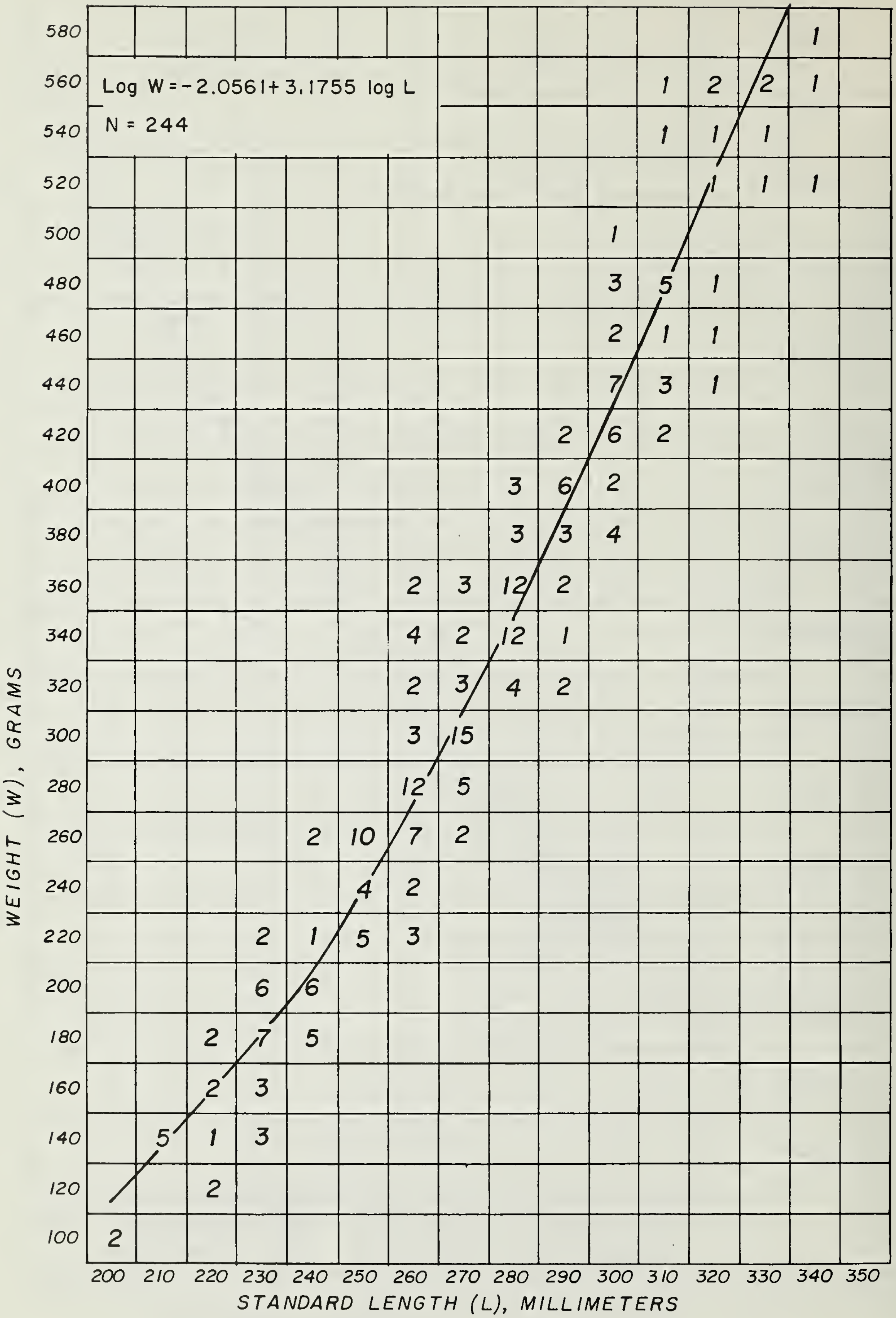


Fig. I-5. Length-Weight Relationship for Female English Sole Collected in October, 1973, Gulf of the Farallones

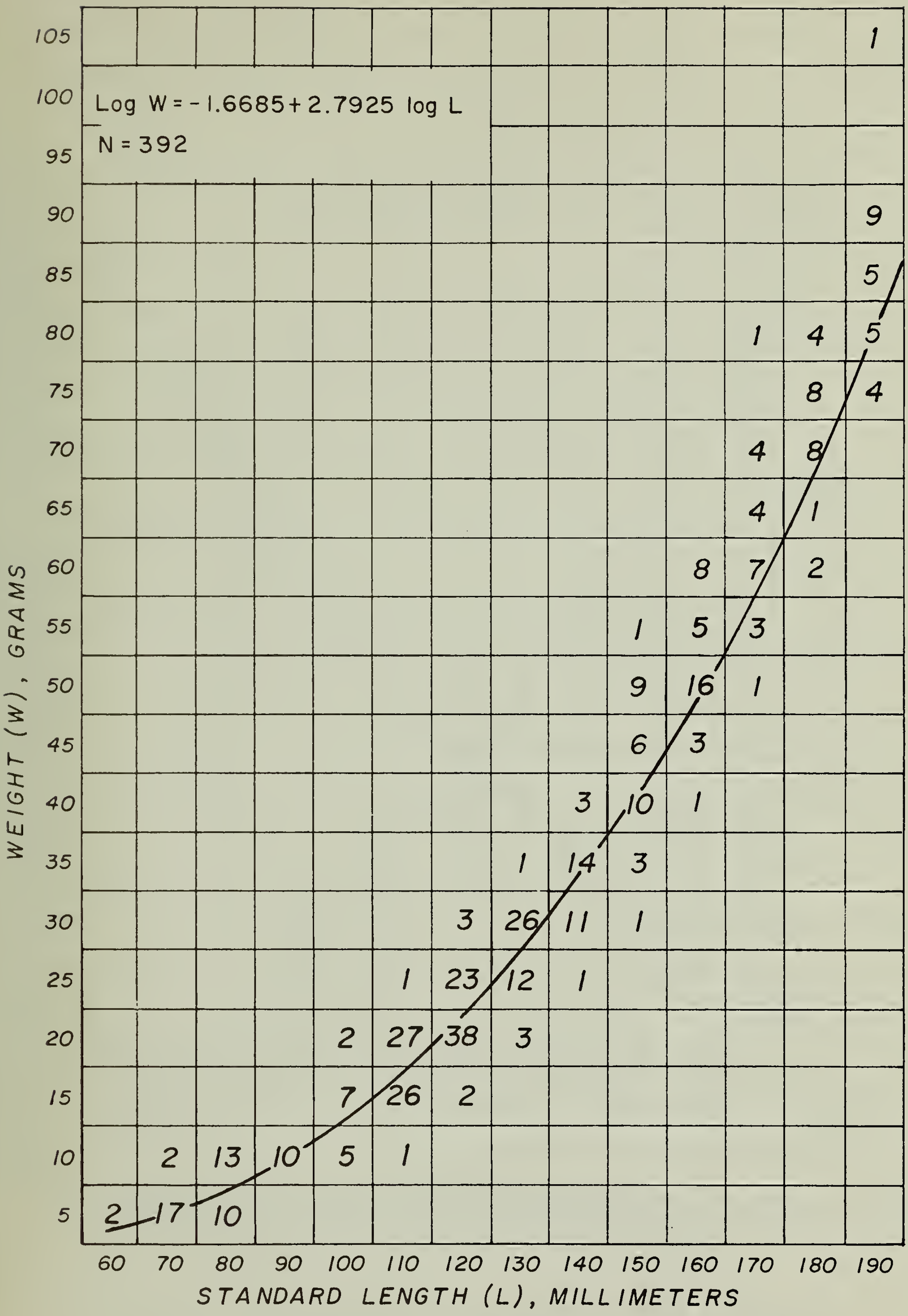


Fig. I-6. Length-Weight Relationship for Juvenile English Sole Collected in April, 1974, Gulf of the Farallones

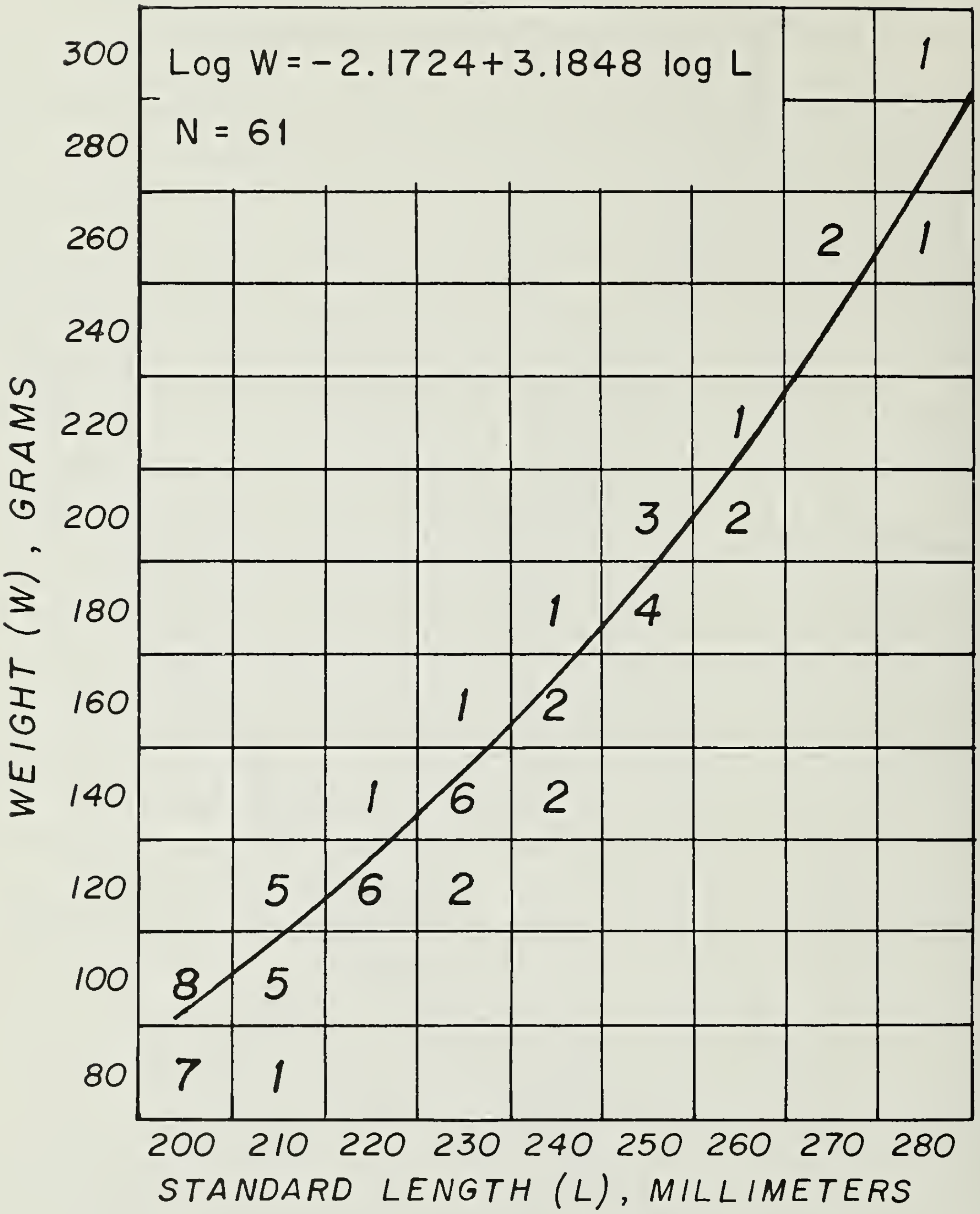


Fig. I-7. Length-Weight Relationship for Male English Sole Collected in April, 1974, Gulf of the Farallones

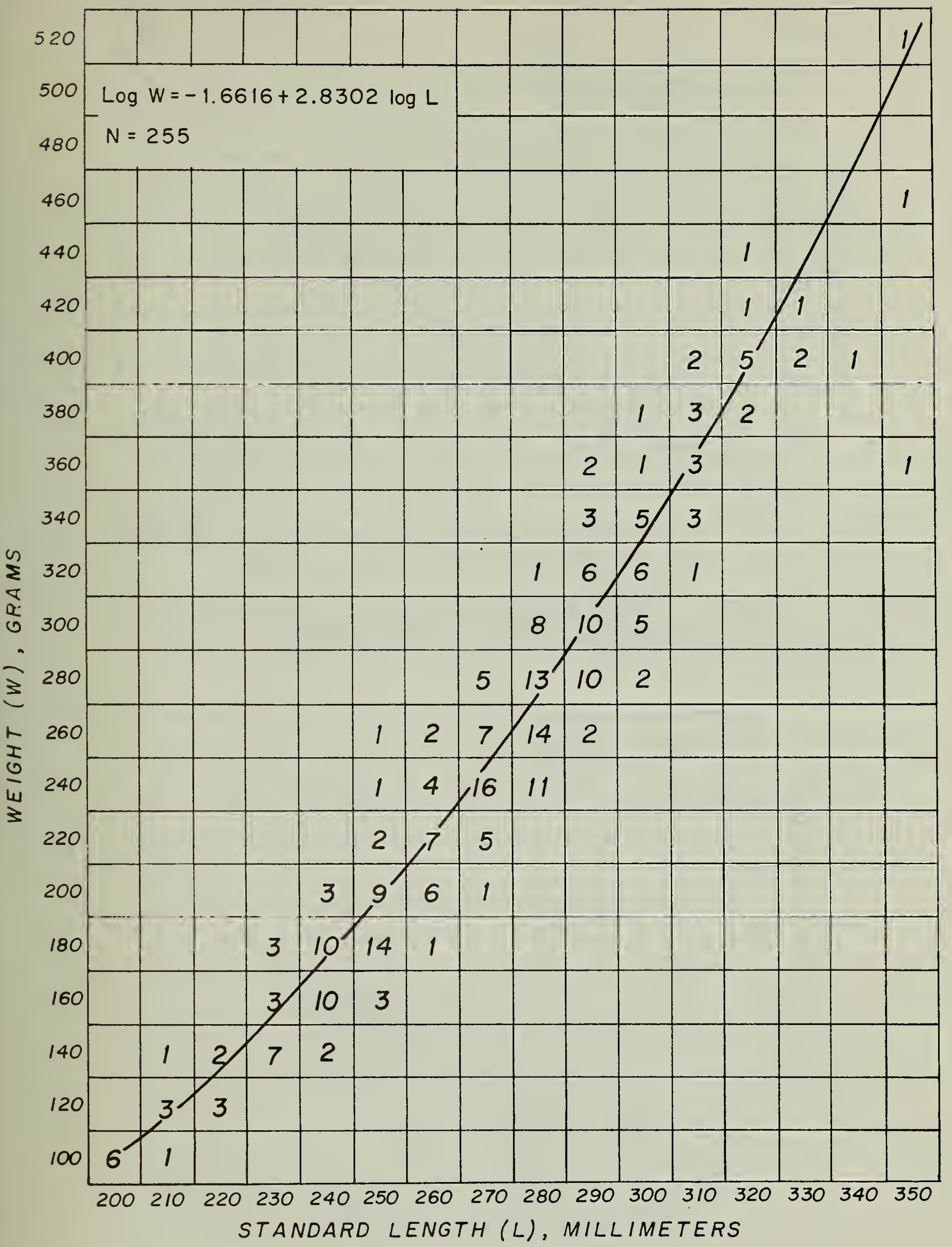


Fig. I-8. Length-Weight Relationship for Female English Sole Collected in April, 1974, Gulf of the Farallones

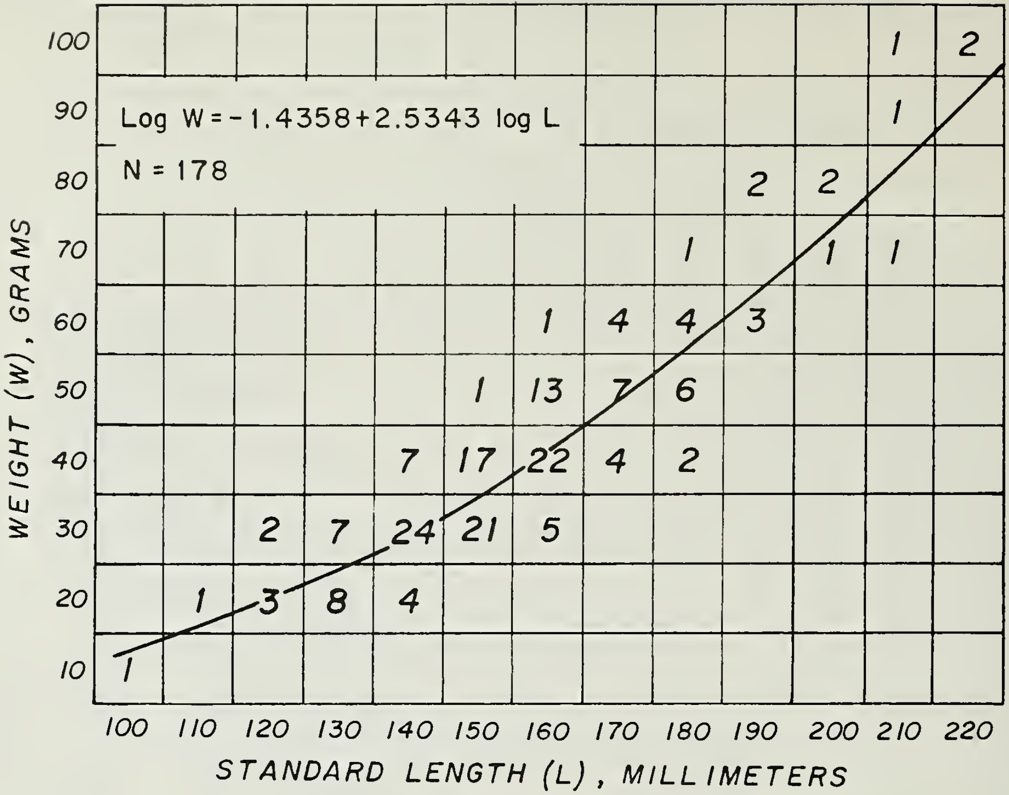


Fig. I-9. Length-Weight Relationship for Pacific Tomcod Collected in July, 1973, Gulf of the Farallones

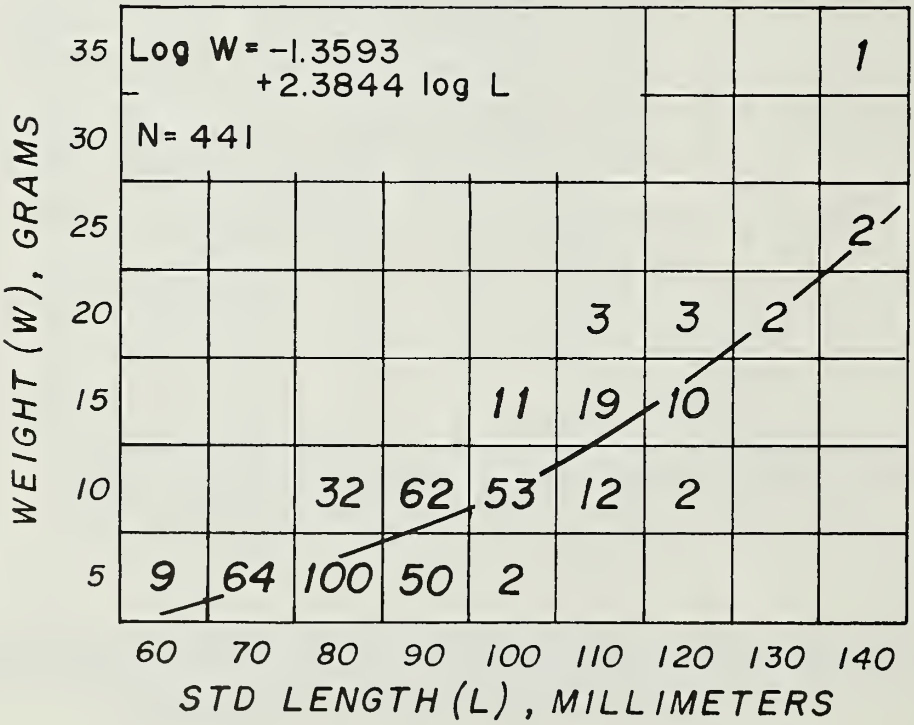


Fig. I-10. Length-Weight Relationship for Juvenile Pacific Tomcod Collected in October, 1973, Gulf of the Farallones

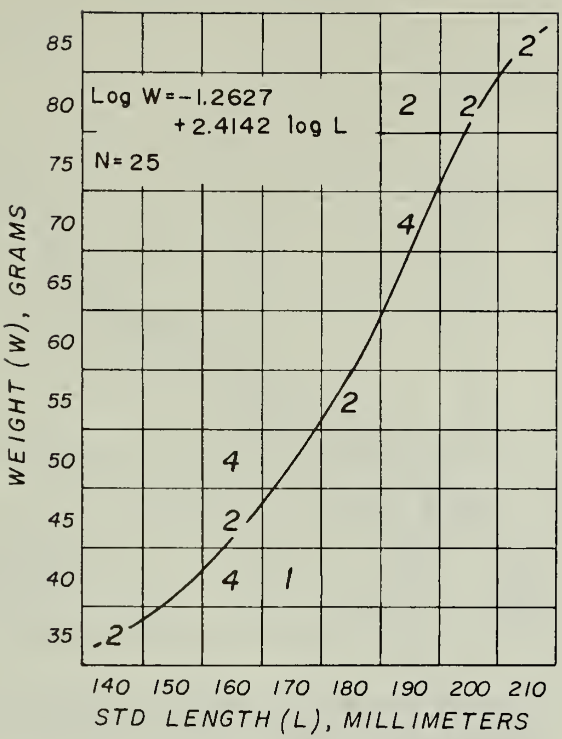


Fig. I-11. Length-Weight Relationship for Female Pacific Tomcod Collected in October, 1973, Gulf of the Farallones

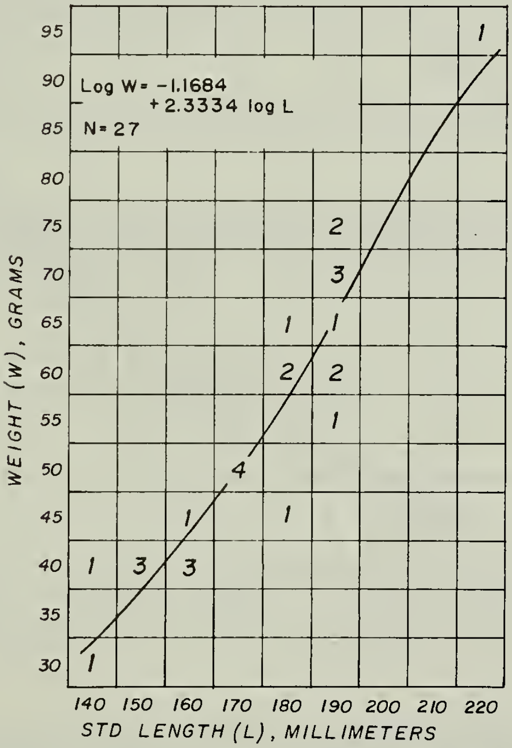


Fig. I-12. Length-Weight Relationship for Male Pacific Tomcod Collected in October, 1973, Gulf of the Farallones

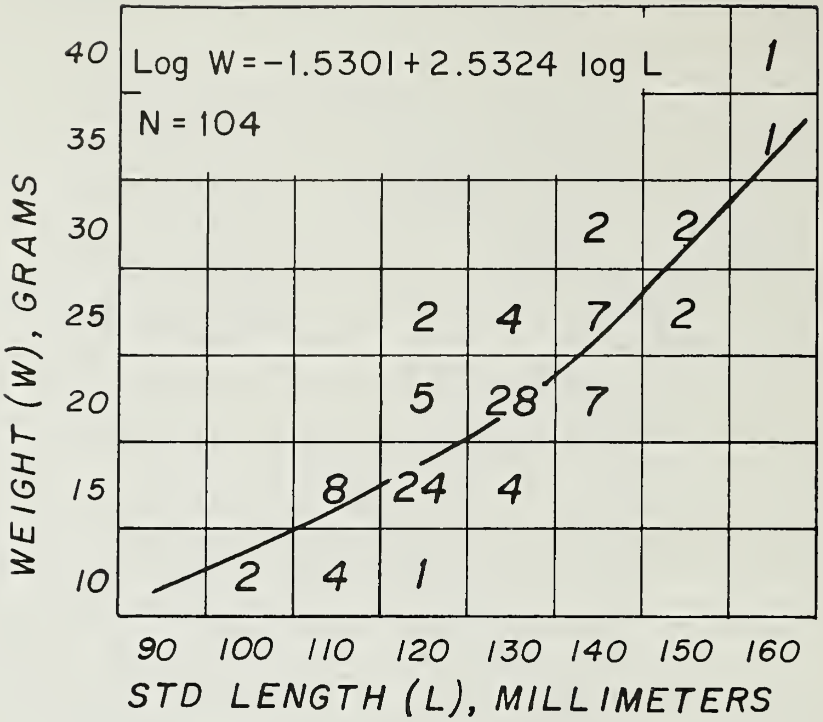


Fig. I-13. Length-Weight Relationship for Male Pacific Tomcod Collected in April, 1974, Gulf of the Farallones

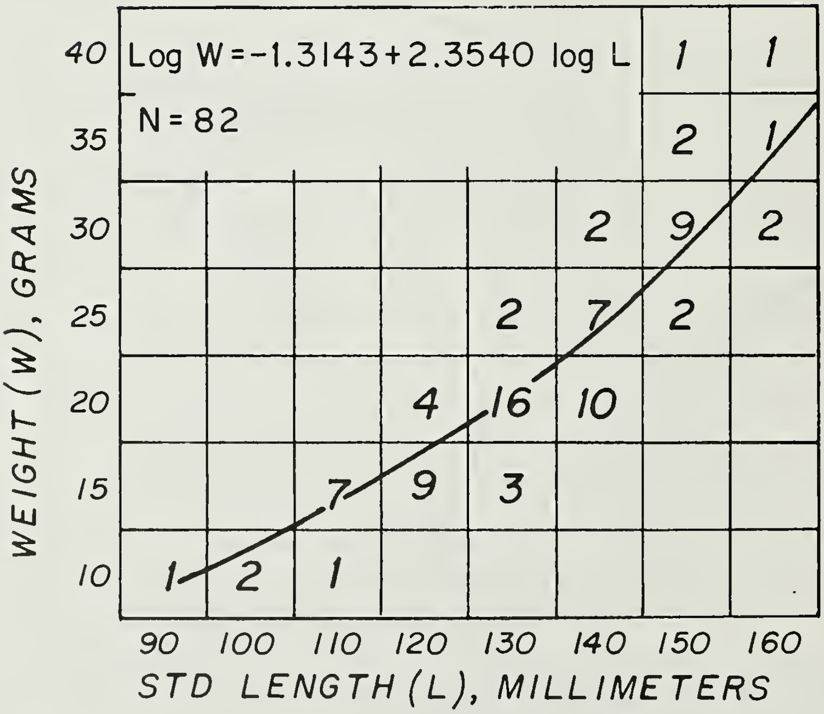


Fig. I-14. Length-Weight Relationship for Female Pacific Tomcod Collected in April, 1974, Gulf of the Farallones

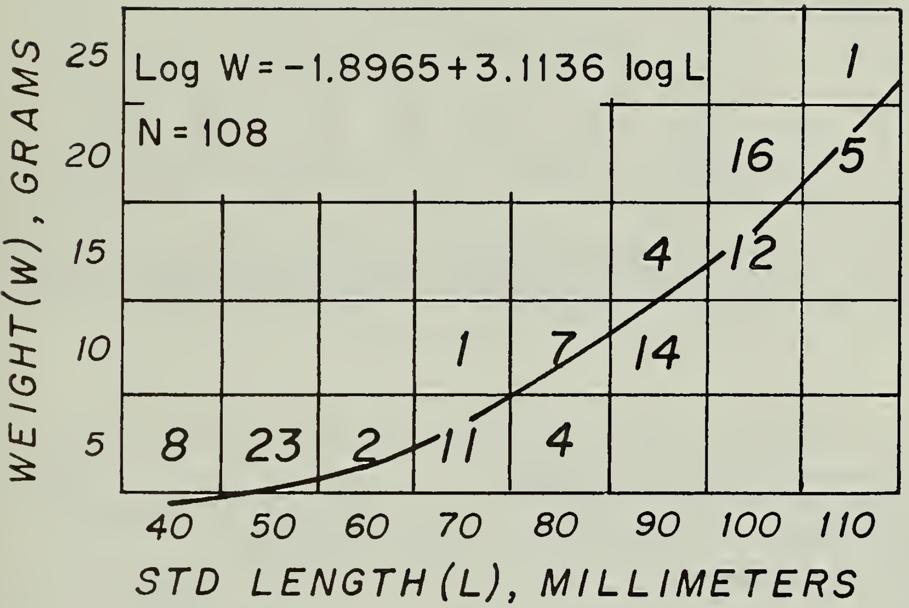


Fig. I-15. Length-Weight Relationship for Speckled Sanddab Collected in July, 1973, Gulf of the Farallones

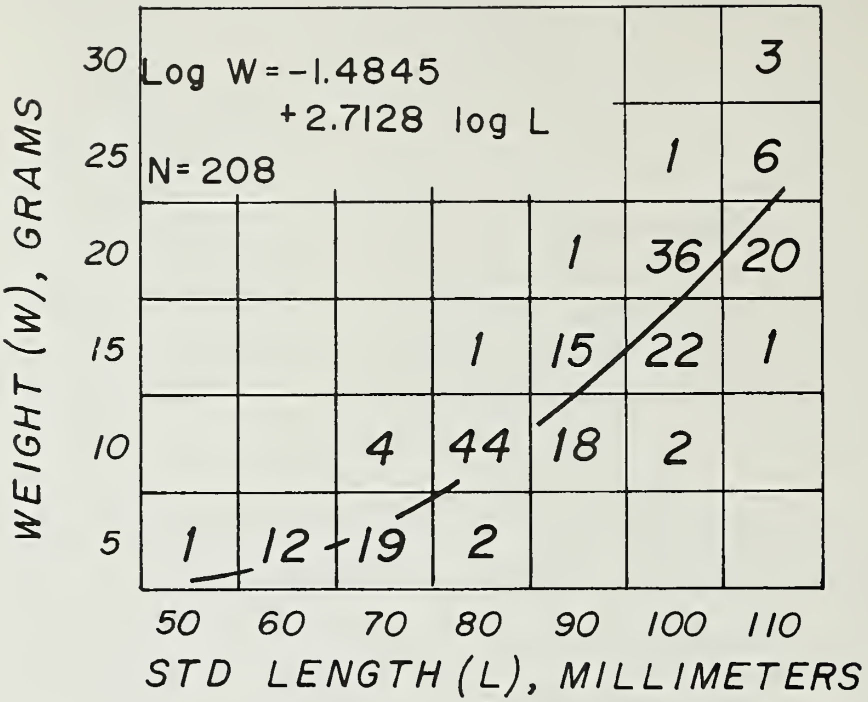


Fig. I-16. Length-Weight Relationship for Male Speckled Sanddab Collected in October, 1973, Gulf of the Farallones

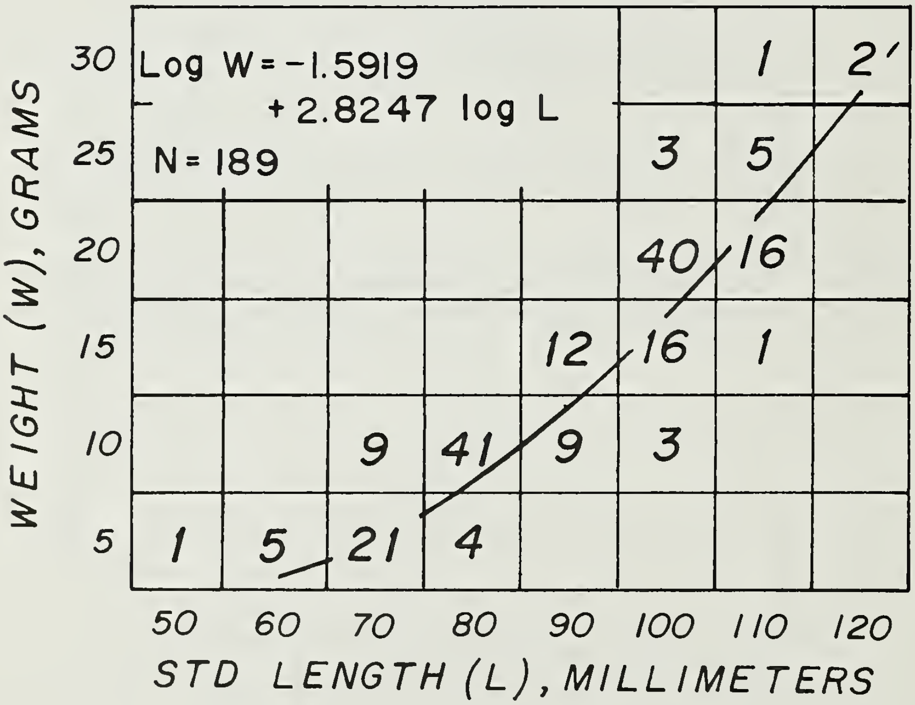


Fig. I-17. Length-Weight Relationship for Female Speckled Sanddab Collected in October, 1973, Gulf of the Farallones

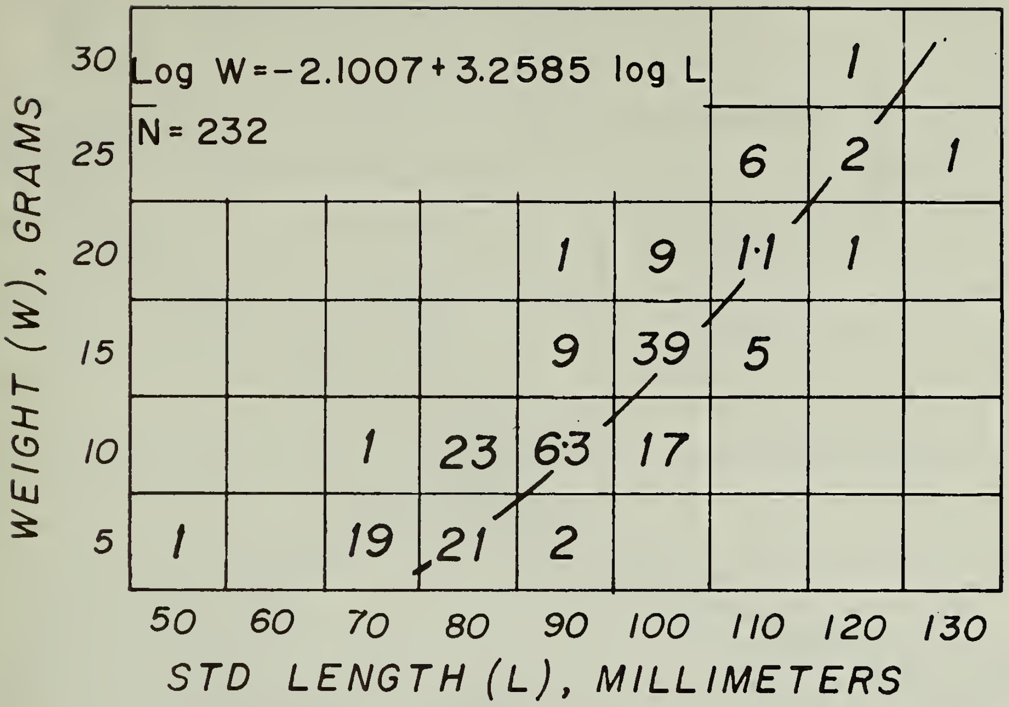


Fig. I-18. Length-Weight Relationship for Male Speckled Sanddab Collected in April, 1974, Gulf of the Farallones

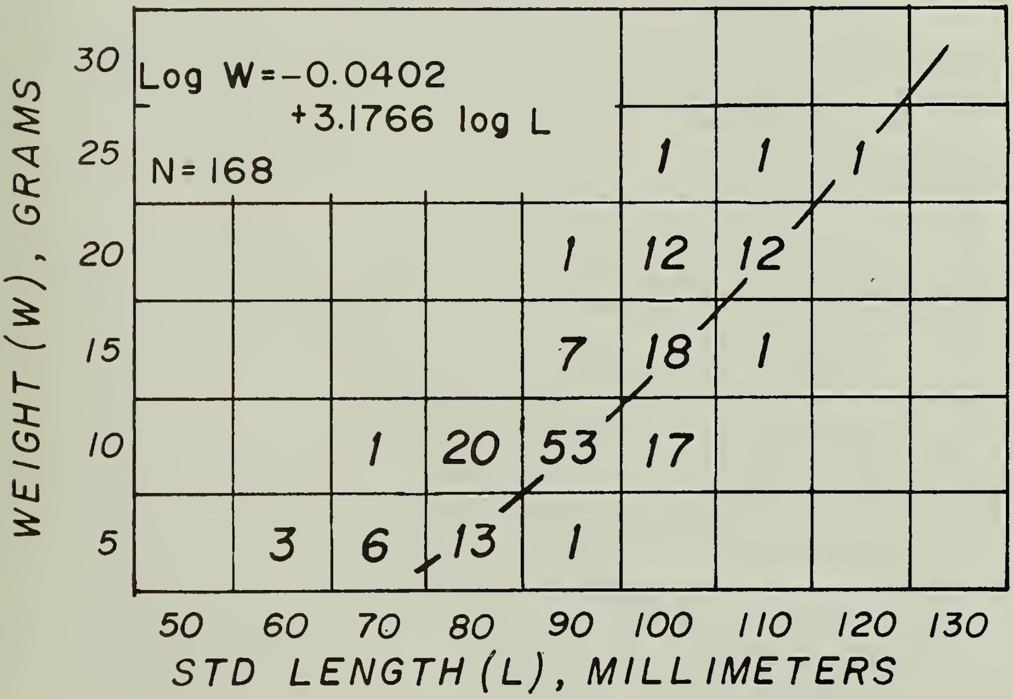


Fig. I-19. Length-Weight Relationship for Female Speckled Sanddab Collected in April, 1974, Gulf of the Farallones

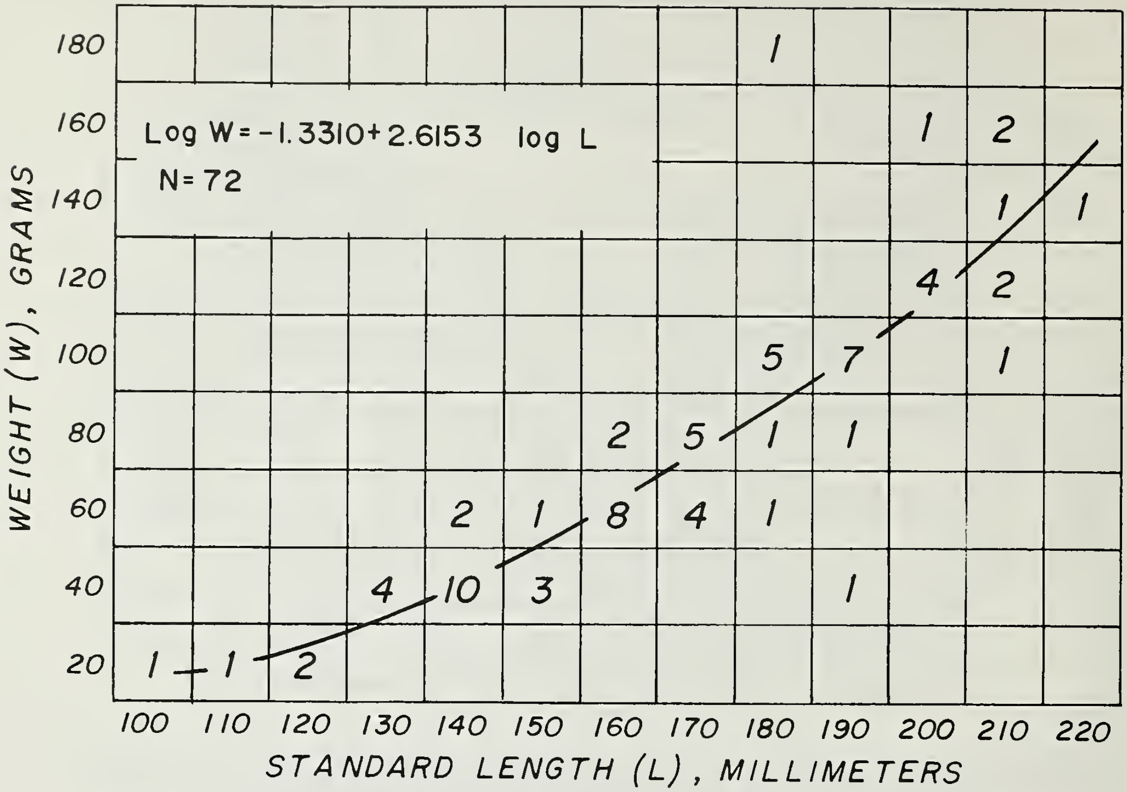


Fig. I-20. Length-Weight Relationship for Male Pacific Sanddab Collected in October, 1973, Gulf of the Farallones

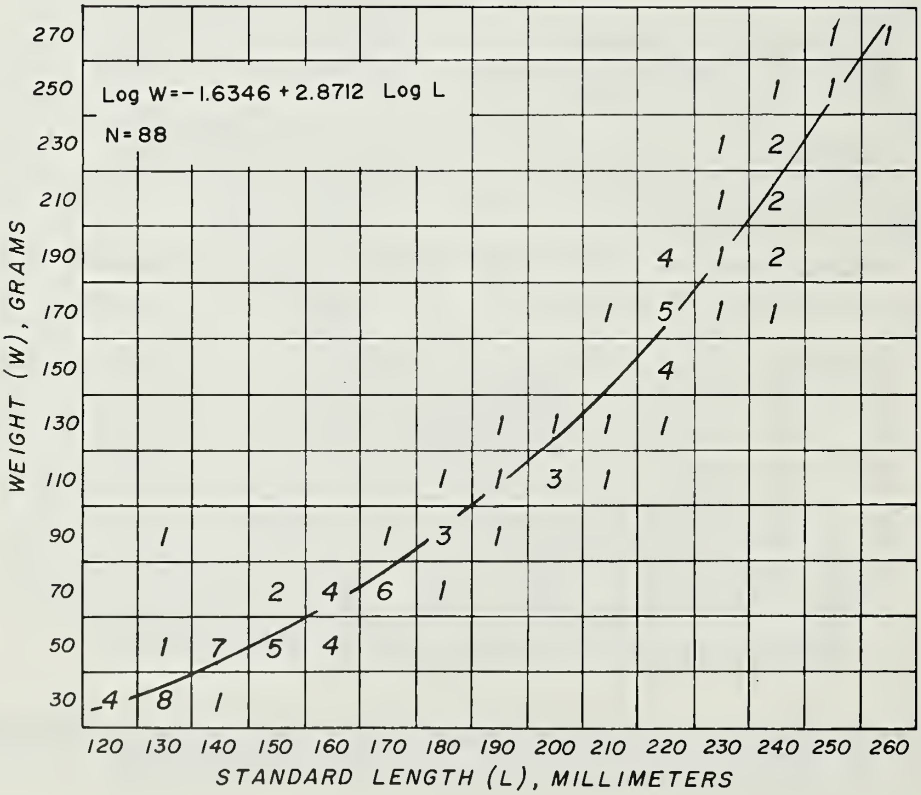


Fig. I-21. Length-Weight Relationship for Female Pacific Sanddab Collected in October, 1973, Gulf of the Farallones

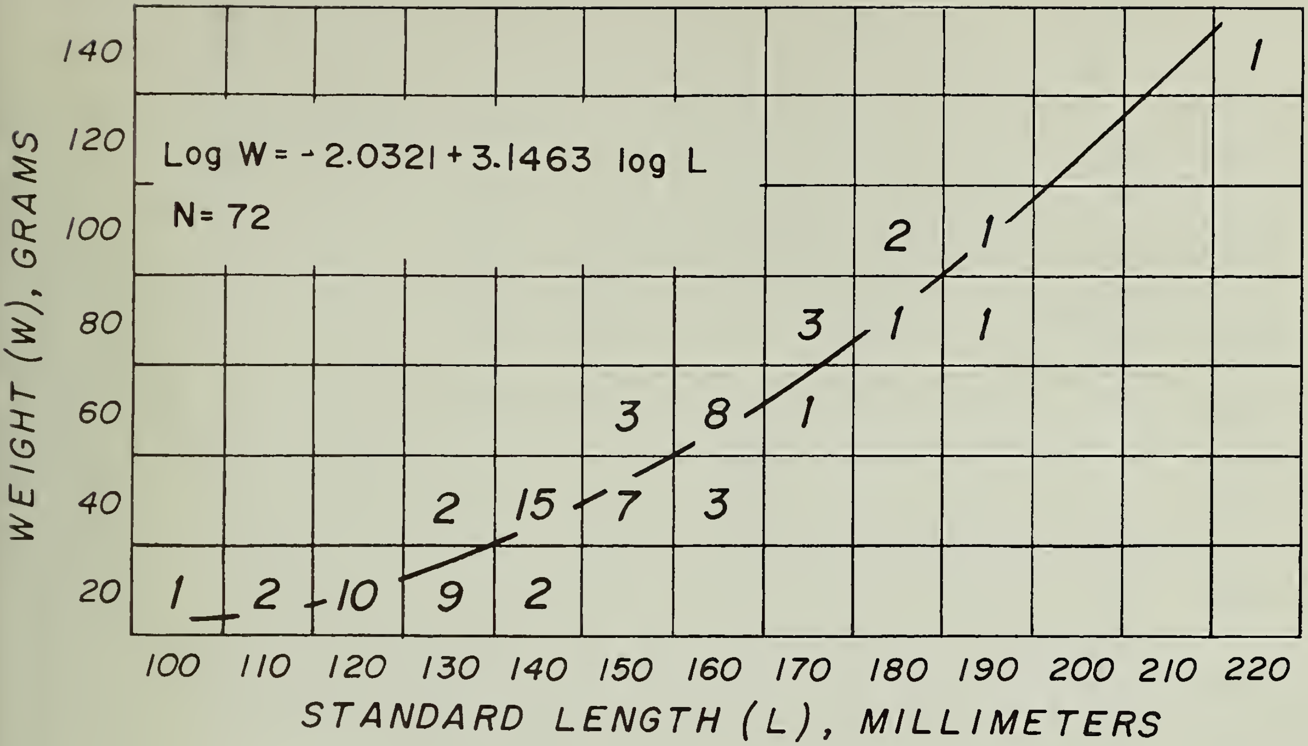


Fig. I-22. Length-Weight Relationship for Male Pacific Sanddab Collected in April, 1974, Gulf of the Farallones

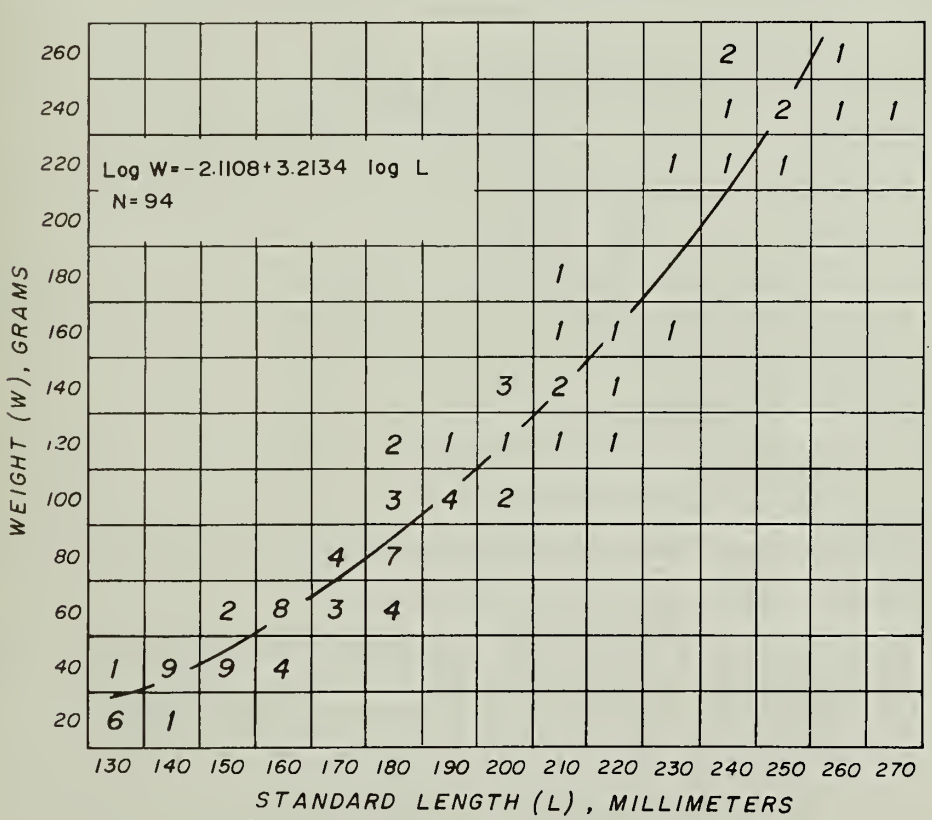


Fig. I-23. Length-Weight Relationship for Female Pacific Sanddab Collected in April, 1974, Gulf of the Farallones

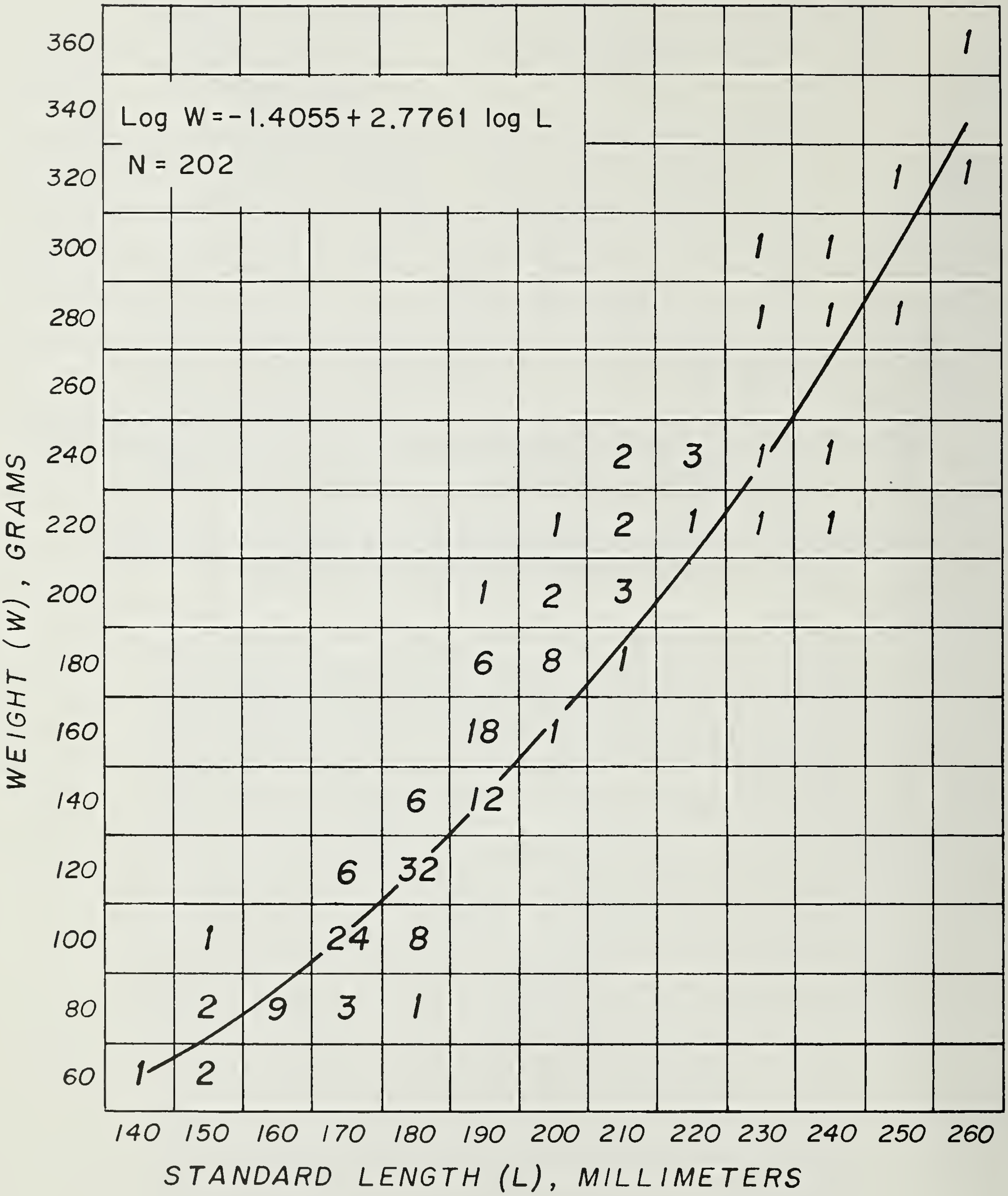


Fig. I-24. Length-Weight Relationship for White Croaker Collected in July, 1973, Gulf of the Farallones

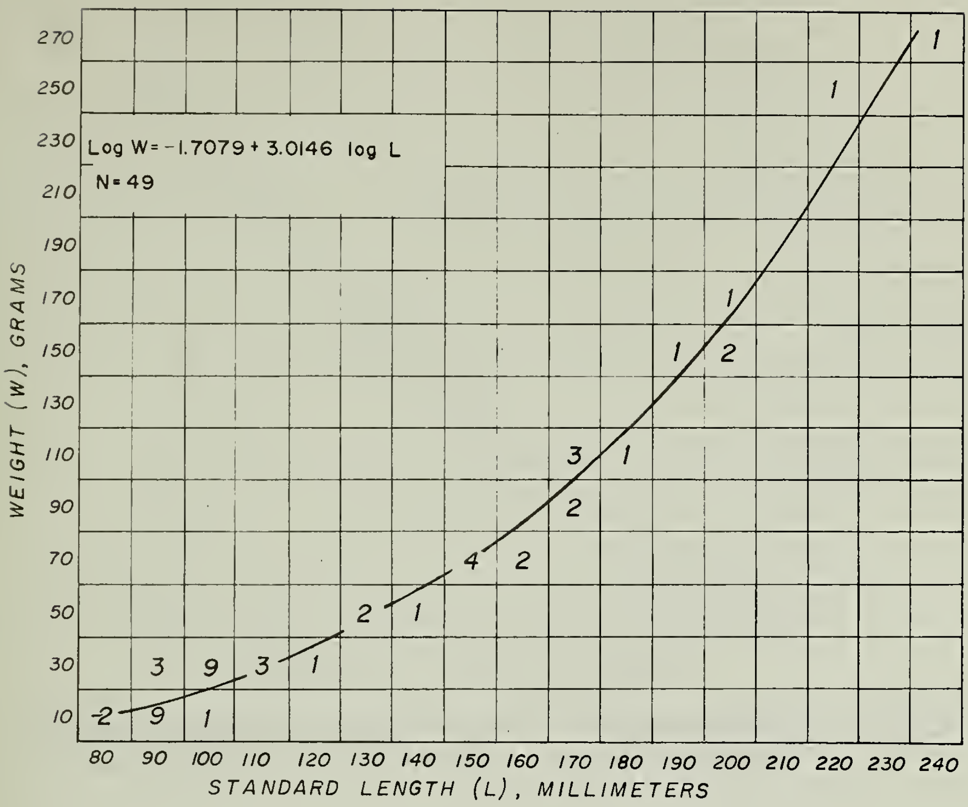


Fig. I-25. Length-Weight Relationship for Male White Croaker Collected in October, 1973, Gulf of the Farallones

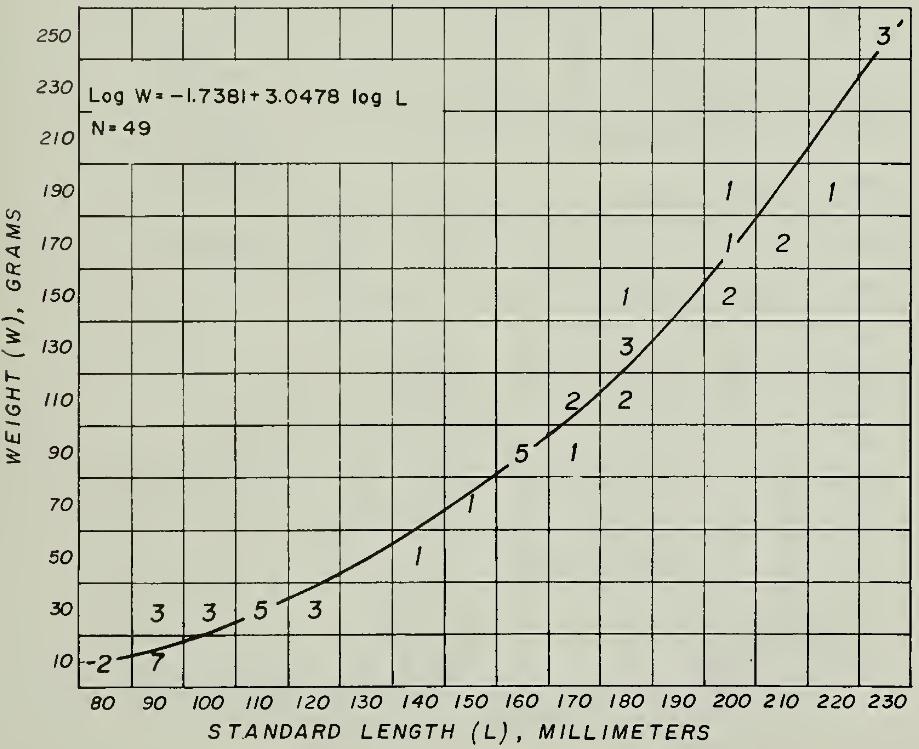


Fig. I-26. Length-Weight Relationship for Female White Croaker Collected in October, 1973, Gulf of the Farallones

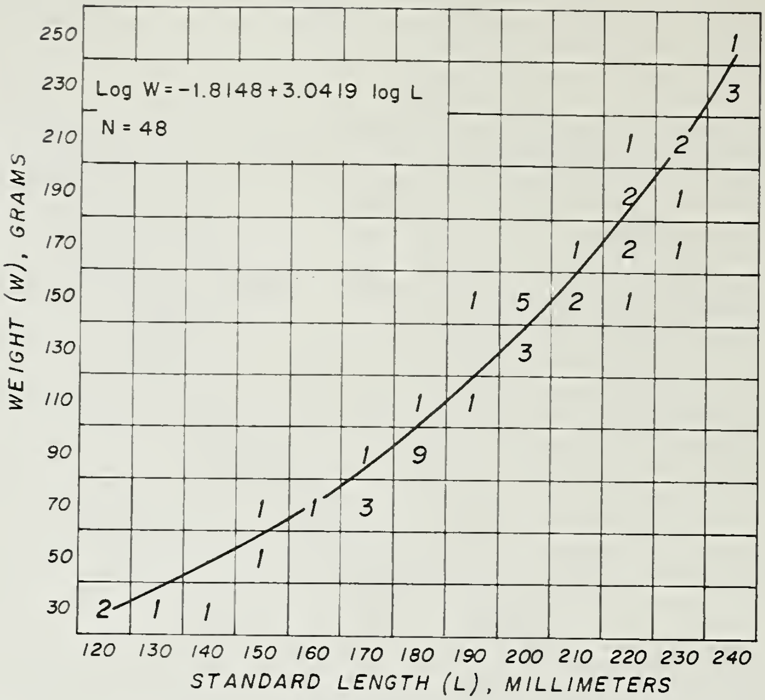


Fig. I-27. Length-Weight Relationship for Male White Croaker Collected in April, 1974, Gulf of the Farallones

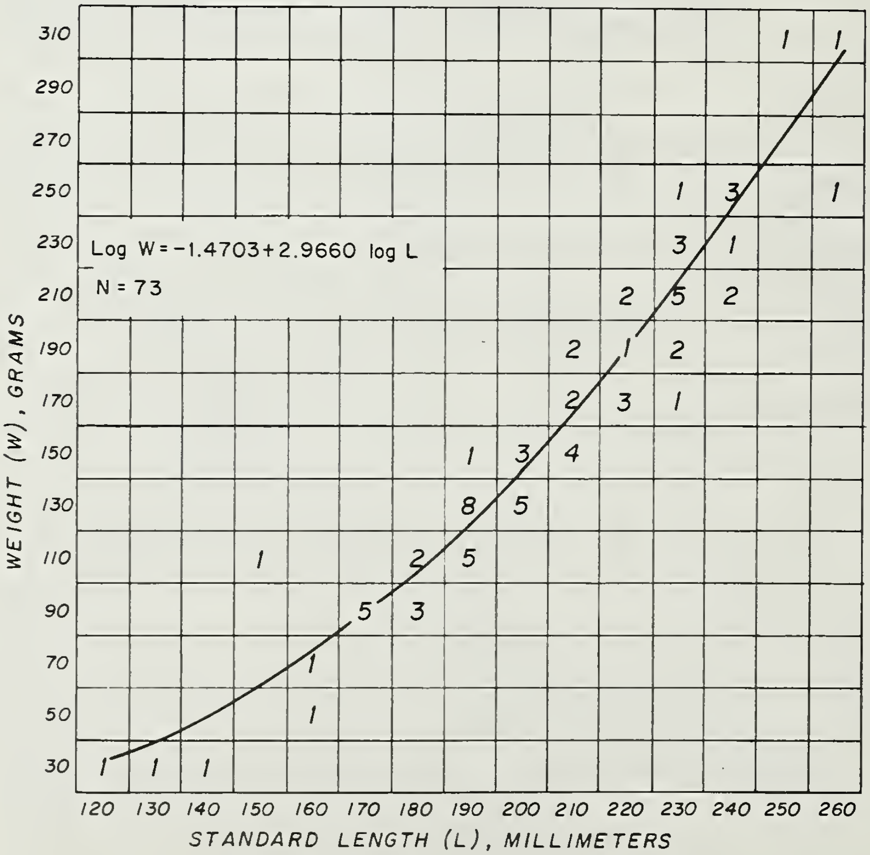


Fig. I-28. Length-Weight Relationship for Female White Croaker Collected in April, 1974, Gulf of the Farallones

Table I-6. Heavy Metals and Chlorinated Hydrocarbons in Fishes and Dungeness Crabs Collected in Trawl Surveys in October 1973, Gulf of the Farallones, mg/kg wet weight

| Species | Standard length, (mm) | Metals | | | | | | | Chlorinated hydrocarbons[a] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Cd | Cr | Cu | Hg | Pb | Ni | Zn | PCB 1262 | DDE |
| starry flounder | 27.4 | < 0.10 | < 0.10 | 0.42 | 0.12 | < 0.10 | < 0.10 | 6.3 | 0.01 | < 0.01 |
| starry flounder | 33.5 | < 0.10 | < 0.10 | 0.30 | 0.36 | < 0.10 | < 0.10 | 3.0 | 0.11 | 0.04 |
| starry flounder | 32.5 | < 0.10 | < 0.10 | 1.1 | 0.20 | < 0.10 | < 0.10 | 2.2 | 0.05 | 0.01 |
| sand sole | 31.6 | < 0.10 | < 0.10 | < 0.10 | 0.11 | < 0.10 | < 0.10 | 2.2 | 0.04 | 0.03 |
| sand sole | 27.0 | < 0.10 | < 0.10 | < 0.10 | 0.11 | < 0.10 | < 0.10 | 2.3 | 0.07 | 0.01 |
| sand sole | 23.5 | < 0.10 | < 0.10 | < 0.10 | 0.04 | < 0.10 | < 0.10 | 2.4 | 0.07 | 0.01 |
| sand sole composite | 9.9-16.0 | < 0.10 | < 0.10 | < 0.10 | 0.05 | < 0.10 | < 0.10 | 9.2 | 0.03 | 0.04 |
| speckled sanddabs composite | 8.7-10.5 | < 0.10 | 0.49 | 0.25 | 0.08 | < 0.10 | < 0.10 | 8.6 | 0.19 | 0.03 |
| English sole composite | 7.5-13.0 | < 0.10 | 2.7 | 0.41 | 0.04 | < 0.10 | < 0.10 | 10 | 0.92 | 0.03 |
| English sole composite | 15.5-19.5 | < 0.10 | 2.5 | 0.36 | 0.07 | < 0.10 | < 0.10 | 8.4 | 0.39 | 0.03 |
| English sole | 32.0 | < 0.10 | < 0.10 | 0.21 | 0.22 | < 0.10 | < 0.10 | 2.1 | 0.04 | 0.01 |
| English sole | 30.5 | < 0.10 | < 0.10 | < 0.10 | 0.15 | < 0.10 | < 0.10 | 2.1 | 0.04 | 0.01 |
| English sole | 30.4 | < 0.10 | < 0.10 | 0.19 | 0.11 | < 0.10 | < 0.10 | 1.9 | 0.03 | 0.01 |
| Pacific sanddabs composite | 14.3-16.0 | < 0.10 | 0.81 | 0.35 | 0.06 | < 0.10 | < 0.10 | 7.0 | 0.10 | 0.02 |
| Pacific sanddabs composite | 17.2-19.1 | < 0.10 | 0.45 | 0.22 | 0.16 | < 0.10 | < 0.10 | 8.9 | 0.12 | 0.01 |
| Pacific sanddabs composite | 22.6-24.2 | < 0.10 | < 0.10 | 0.38 | 0.14 | < 0.10 | < 0.10 | 1.9 | 0.05 | 0.01 |
| Dungeness crab | 106 | < 0.10 | < 0.10 | 2.9 | 0.07 | < 0.10 | < 0.10 | 26 | 0.02 | < 0.01 |
| Dungeness crab | 146 | < 0.10 | < 0.10 | 2.3 | 0.28 | < 0.10 | < 0.10 | 30 | 0.07 | 0.03 |
| Dungeness crab | 150 | < 0.10 | < 0.10 | 1.7 | 0.32 | < 0.10 | < 0.10 | 28 | 0.10 | 0.08 |

[a] Concentrations of chlorinated hydrocarbons other than PCB 1262 (a polychlorinated biphenyl) and DDE were below the lower detection limit of 0.1 mg/kg wet weight.

Table 1-7. Heavy Metals in Fishes and Dungeness Crabs Collected in Trawl Surveys in October 1973, Gulf of the Farallones, mg/kg dry weight

| Species | Standard length, (mm) | Metals | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Cd | Cr | Cu | Hg | Pb | Ni | Zn |
| starry flounder | 27.4 | < 1.0 | < 1.0 | 2.4 | 0.67 | < 1.0 | < 1.0 | 36 |
| starry flounder | 33.5 | < 1.0 | < 1.0 | 1.5 | 1.8 | < 1.0 | < 1.0 | 15 |
| starry flounder | 32.5 | < 1.0 | < 1.0 | 5.0 | 0.90 | < 1.0 | < 1.0 | 10 |
| sand sole | 31.6 | < 1.0 | < 1.0 | < 1.0 | 0.59 | < 1.0 | < 1.0 | 11 |
| sand sole | 27.0 | < 1.0 | < 1.0 | < 1.0 | 0.50 | < 1.0 | < 1.0 | 10 |
| sand sole | 23.5 | < 1.0 | < 1.0 | < 1.0 | 0.18 | < 1.0 | < 1.0 | 11 |
| sand sole composite | 9.9-16.0 | < 1.0 | < 1.0 | < 1.0 | 0.24 | < 1.0 | < 1.0 | 40 |
| speckled sanddabs composite | 8.7-10.5 | < 1.0 | 2.3 | 1.1 | 0.36 | < 1.0 | < 1.0 | 40 |
| English sole composite | 7.5-13.0 | < 1.0 | 10 | 1.6 | 0.16 | < 1.0 | < 1.0 | 39 |
| English sole composite | 15.5-19.5 | < 1.0 | 11 | 1.6 | 0.32 | < 1.0 | < 1.0 | 37 |
| English sole | 32.0 | < 1.0 | < 1.0 | 0.86 | 0.86 | < 1.0 | < 1.0 | 8.6 |
| English sole | 30.5 | < 1.0 | < 1.0 | < 1.0 | 0.62 | < 1.0 | < 1.0 | 8.6 |
| English sole | 30.4 | < 1.0 | < 1.0 | 0.85 | 0.50 | < 1.0 | < 1.0 | 8.5 |
| Pacific sanddabs composite | 14.3-16.0 | < 1.0 | 3.4 | 1.4 | 0.22 | < 1.0 | < 1.0 | 29 |
| Pacific sanddabs composite | 17.2-19.1 | < 1.0 | 1.9 | 0.94 | 0.67 | < 1.0 | < 1.0 | 38 |
| Pacific sanddabs composite | 22.6-24.2 | < 1.0 | < 1.0 | 1.9 | 0.75 | < 1.0 | < 1.0 | 9.8 |
| Dungeness crab | 106 | < 1.0 | < 1.0 | 13 | 0.32 | < 1.0 | < 1.0 | 115 |
| Dungeness crab | 146 | < 1.0 | < 1.0 | 11 | 1.3 | < 1.0 | < 1.0 | 138 |
| Dungeness crab | 150 | < 1.0 | < 1.0 | 78 | 1.5 | < 1.0 | < 1.0 | 126 |

Table I-8. Heavy Metals and Chlorinated Hydrocarbons in Fishes and Dungeness Crabs Collected in Trawl Surveys in April 1974, Gulf of the Farallones, mg/kg wet weight

| Species | Standard length, (mm) | Metals | | | | | | | Chlorinated hydrocarbons[a] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Cd | Cr | Cu | Hg | Pb | Ni | Zn | PCB 1262 | DDE |
| English sole composite | 8.3-15.5 | < 0.10 | 1.2 | 0.67 | 0.08 | < 0.10 | < 0.10 | 7.8 | 0.49 | 0.04 |
| English sole composite | 17.0-20.3 | < 0.10 | 0.81 | 0.11 | 0.08 | < 0.10 | < 0.10 | 6.9 | 0.46 | 0.04 |
| English sole | 29.0 | < 0.10 | < 0.10 | 0.24 | 0.21 | < 0.10 | < 0.10 | 1.2 | 0.10 | 0.01 |
| English sole | 29.5 | < 0.10 | < 0.10 | 0.23 | 0.15 | < 0.10 | < 0.10 | 1.2 | 0.09 | 0.01 |
| English sole | 29.2 | < 0.10 | < 0.10 | 0.45 | 0.25 | < 0.10 | < 0.10 | 1.7 | 0.07 | 0.01 |
| Pacific sanddabs composite | 14.7-17.2 | < 0.10 | < 0.10 | 0.44 | 0.07 | < 0.10 | < 0.10 | 5.5 | 0.18 | 0.02 |
| sand sole composite | 8.7-12.7 | < 0.10 | 0.80 | 0.40 | 0.03 | < 0.10 | < 0.10 | 15 | 0.07 | 0.02 |
| sand sole composite | 14.4-19.5 | < 0.10 | < 0.10 | 0.37 | 0.02 | < 0.10 | < 0.10 | 8.6 | 0.24 | 0.01 |
| sand sole | 28.0 | < 0.10 | < 0.10 | 0.11 | 0.08 | < 0.10 | < 0.10 | 1.1 | 0.12 | 0.02 |
| sand sole | 30.0 | < 0.10 | < 0.10 | 0.18 | 0.05 | < 0.10 | < 0.10 | 1.8 | 0.10 | 0.02 |
| sand sole | 28.0 | < 0.10 | < 0.10 | < 0.10 | 0.21 | < 0.10 | < 0.10 | 1.1 | 0.16 | 0.02 |
| starry flounder | 21.0 | < 0.10 | < 0.10 | 0.49 | 0.02 | < 0.10 | < 0.10 | 2.5 | 0.10 | 0.01 |
| Dungeness crab | 170 | < 0.10 | < 0.10 | 15 | 0.21 | < 0.10 | < 0.10 | 45 | 0.02 | 0.01 |
| Dungeness crab | 159 | < 0.10 | < 0.10 | 13 | 0.16 | < 0.10 | < 0.10 | 49 | 0.06 | 0.03 |
| Dungeness crab | 152 | < 0.10 | < 0.10 | 8.0 | 0.57 | < 0.10 | < 0.10 | 41 | 0.04 | 0.01 |
| Dungeness crab | 150 | < 0.10 | < 0.10 | 6.5 | 0.69 | < 0.10 | < 0.10 | 35 | 0.03 | 0.01 |
| Dungeness crab | 145 | < 0.10 | < 0.10 | 13 | 0.39 | < 0.10 | < 0.10 | 39 | 0.04 | 0.02 |
| Dungeness crab | 115 | < 0.10 | < 0.10 | 8.7 | 0.18 | < 0.10 | < 0.10 | 36 | 0.03 | < 0.01 |

[a] Concentrations of chlorinated hydrocarbons other than PCB 1262 (a polychlorinated biphenyl) and DDE were below the lower detection limit of 0.1 mg/kg wet weight.

Table I-9. Heavy Metals in Fishes and Dungeness Crabs Collected in Trawl Surveys in April 1974, Gulf of the Farallones, mg/kg dry weight

| Species | Standard length, (mm) | Metals | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Cd | Cr | Cu | Hg | Pb | Ni | Zn |
| English sole composite | 8.3-15.5 | < 1.0 | 5.1 | 2.8 | 0.34 | < 1.0 | < 1.0 | 33 |
| English sole composite | 17.0-20.3 | < 1.0 | 3.6 | 0.51 | 0.35 | < 1.0 | < 1.0 | 31 |
| English sole | 29.0 | < 1.0 | < 1.0 | 1.3 | 1.1 | < 1.0 | < 1.0 | 6.4 |
| English sole | 29.5 | < 1.0 | < 1.0 | 1.2 | 0.72 | < 1.0 | < 1.0 | 5.7 |
| English sole | 29.2 | < 1.0 | < 1.0 | 1.9 | 1.2 | < 1.0 | < 1.0 | 7.9 |
| Pacific sanddabs composite | 14.7-17.2 | < 1.0 | < 1.0 | 1.9 | 0.28 | < 1.0 | < 1.0 | 23 |
| sand sole composite | 8.7-12.7 | < 1.0 | 3.3 | 1.7 | 0.11 | < 1.0 | < 1.0 | 62 |
| sand sole composite | 14.4-19.5 | < 1.0 | < 1.0 | 1.3 | 0.08 | < 1.0 | < 1.0 | 30 |
| sand sole | 28.0 | < 1.0 | < 1.0 | 0.43 | 0.31 | < 1.0 | < 1.0 | 4.3 |
| sand sole | 30.0 | < 1.0 | < 1.0 | 0.79 | 0.23 | < 1.0 | < 1.0 | 7.9 |
| sand sole | 28.0 | < 1.0 | < 1.0 | < 1.0 | 0.99 | < 1.0 | < 1.0 | 5.2 |
| starry flounder | 21.0 | < 1.0 | < 1.0 | 2.2 | 0.11 | < 1.0 | < 1.0 | 11 |
| Dungeness crab | 170 | < 1.0 | < 1.0 | 51 | 0.69 | < 1.0 | < 1.0 | 150 |
| Dungeness crab | 159 | < 1.0 | < 1.0 | 48 | 0.64 | < 1.0 | < 1.0 | 198 |
| Dungeness crab | 152 | < 1.0 | < 1.0 | 33 | 2.3 | < 1.0 | < 1.0 | 170 |
| Dungeness crab | 150 | < 1.0 | < 1.0 | 26 | 2.8 | < 1.0 | < 1.0 | 145 |
| Dungeness crab | 145 | < 1.0 | < 1.0 | 54 | 1.6 | < 1.0 | < 1.0 | 158 |
| Dungeness crab | 115 | < 1.0 | < 1.0 | 28 | 0.60 | < 1.0 | < 1.0 | 117 |

# Benthic Infauna

- Relationship between the Volume of Sediment and the Number of Organisms Collected in Grab Samples
- Organisms Collected at Each Station

# RELATIONSHIP BETWEEN THE VOLUME OF SEDIMENT AND THE NUMBER OF ORGANISMS COLLECTED IN GRAB SAMPLES

The qualitative rather than the quantitative aspects were emphasized in the design of this study. For this reason, there was no extensive period devoted to the selection of the type of sampler used. To make a comprehensive survey of the benthic infaunal organisms of this area would have necessitated a long-term, in-depth study. On the first survey in July 1973, both a Peterson dredge and a Shipek dredge were tested to determine which of these two available samplers would suffice in obtaining samples. The Peterson dredge proved to be totally ineffectual in obtaining samples because of the compact nature of the sediments. The Shipek dredge was able to obtain a sufficient sample and was therefore used on subsequent surveys. This does not imply that this is the best sampler to use in this area. The major problems encountered with the Shipek dredge were that the sample size was usually less than a liter of sediment and there were inconsistencies in sample size between stations and among the three surveys.

To determine if there were any significant effects due to variations in sample size, records of sample volume and the number of organisms in each sample were kept for analysis.

Table I-10 summarizes the volume data, showing the mean and standard deviation for each set of replicates collected. Although there was some overlap, the samples collected in October 1973 were much larger (averaging 0.74± 0.31 liter) than those collected in either the July 1973 or February 1974 surveys (0.41± 0.22 and 0.42± 0.23 liter, respectively). In part, this provides an explanation for the relatively large number of organisms collected in the October 1973 survey. Possible shifts in bottom material composition and heavy seas may also be causative factors.

Table I-10. Total Number of Animals by Station, Mean and Standard Deviation

| Station | July 1973 | October 1973 | February 1974 |
|---|---|---|---|
| 39-1 | 62.3 ± 13.7 | 165.3 ±112.9 | 57.7 ± 16.3 |
| 39-2 | 64.0 ± 24.3 | 126.3 ± 20.0 | 44.0 ± 25.2 |
| 39-4 | 43.0 ± 11.1 | 113.0 ± 30.8 | 37.7 ± 9.0 |
| 40-3 | 70.7 ± 9.1 | 125.7 ± 48.5 | 43.3 ± 17.8 |
| 40-4 | 60.0 ± 5.0 | 97.3 ± 19.9 | 38.0 ± 17.8 |
| 40-6 | 34.3 ± 11.5 | 112.0 ± 33.8 | 38.3 ± 23.9 |
| 41-2 | 87.7 ± 25.0 | 115.3 ± 60.1 | 77.3 ± 18.9 |
| 41-5 | 53.3 ± 8.1 | 87.3 ± 20.1 | 37.7 ± 21.4 |
| 41.5-3 | 103.0 ± 41.2 | 424.7 ± 54.9 | 155.7 ± 81.0 |
| 42-1 | 111.7 ± 21.9 | 196.7 ± 58.6 | 71.0 ± 18.5 |
| 42-2 | 110.0 ± 39.9 | 155.7 ± 20.0 | 66.3 ± 22.8 |
| 42-4 | 61.0 ± 19.3 | 202.3 ± 96.6 | 39.3 ± 3.8 |
| 42-6 | 100.0 ± 12.3 | 77.3 ± 24.4 | 25.7 ± 17.8 |
| 43-1 | 61.7 ± 30.0 | 39.7 ± 17.8 | 39.3 ± 29.0 |
| 43-3 | 144.3 ± 63.3 | 99.3 ± 32.9 | 39.7 ± 9.3 |
| 43-4 | 39.3 ± 14.0 | 288.3 ± 85.5 | 53.3 ± 11.2 |
| 44-1 | 64.3 ± 10.1 | 25.7 ± 12.7 | 27.3 ± 14.6 |
| 44-3 | 12.3 ± 6.0 | 16.3 ± 12.9 | 10.0 ± 6.1 |
| 44-5 | 73.7 ± 27.0 | 88.7 ± 80.0 | 36.7 ± 29.5 |
| 44-6 | 40.0 ± 14.2 | 307.3 ±139.2 | 44.3 ± 12.7 |
| 45-5 | 9.7 ± 3.2 | 11.3 ± 5.5 | 19.3 ± 20.6 |
| 45-6 | 68.0 ± 26.1 | 59.0 ± 19.1 | 18.0 ± 14.0 |

An attempt was made to evaluate the effect of the variation in sample volumes on the numbers of animals collected. This was done in two ways. First, a correlation analysis was run between the individual sample volumes for each replicate and the total number of organisms collected in each replicate. Secondly, the data were normalized by calculating the number of organisms per liter of sample, and then comparing the results. The purpose of this second procedure was to eliminate the effects of varying sample volume, but the procedure has the drawback of assuming that the animals were evenly distributed throughout the sediment.

There was a positive correlation between sample volumes and the numbers of organisms collected. The correlation was statistically significant at the 95 percent confidence level ($r = 0.270$ and $r = 0.369$, respectively, 64 degrees of freedom) for the July 1973 and October 1973 data, but not the February 1974 data ($r = 0.154$). On the latter survey, sampling was undertaken under adverse weather conditions, and this may have affected the results.

The extent of the sample volume effect was evaluated by comparing the data for the three surveys after they had been expressed on a unit volume basis. A summary of the data used in the calculations is presented in Tables I-10 and I-11, which show the means and standard deviations of the numbers of animals collected per station and the volumes of samples, respectively. To normalize the data, the total number of animals in each replicate was divided by the corresponding sample volume and the quotients were then summed for each survey. Almost identical numbers of animals, each representing 66 one-liter replicates, resulted for the July and October 1973 surveys (12,799 and 12,863), although a much lower number (8,377) was obtained for the February 1974 survey. A comparison of these numbers to the actual numbers of animals collected (see Table 4-28 in the text) shows that the effect of variations in sample volumes masks any possible seasonal fluctuations. It is likely, however, that seasonal variations occur among the various species.

Table I-11. Volumes of Sediment Samples, Mean and Standard Deviation, liter

| Station | July 1973 | October 1973 | February 1974 |
|---|---|---|---|
| 39-1 | 0.30 ± 0.00 | 0.65 ± 0.30 | 0.40 ± 0.13 |
| 39-2 | 0.22 ± 0.00 | 0.82 ± 0.40 | 0.27 ± 0.10 |
| 39-4 | 0.25 ± 0.04 | 0.46 ± 0.09 | 0.51 ± 0.20 |
| 40-3 | 0.33 ± 0.05 | 0.84 ± 0.38 | 0.52 ± 0.50 |
| 40-4 | 0.28 ± 0.11 | 0.62 ± 0.07 | 0.30 ± 0.10 |
| 40-6 | 0.18 ± 0.10 | 0.54 ± 0.15 | 0.32 ± 0.26 |
| 41-2 | 0.33 ± 0.05 | 0.60 ± 0.16 | 0.44 ± 0.09 |
| 41-5 | 0.22 ± 0.05 | 0.81 ± 0.49 | 0.45 ± 0.30 |
| 41.5-3 | 0.60 ± 0.24 | 1.01 ± 0.25 | 0.37 ± 0.19 |
| 42-1 | 0.46 ± 0.20 | 0.52 ± 0.12 | 0.36 ± 0.05 |
| 42-2 | 0.33 ± 0.05 | 0.71 ± 0.49 | 0.41 ± 0.20 |
| 42-4 | 0.27 ± 0.11 | 0.79 ± 0.49 | 0.26 ± 0.04 |
| 42-6 | 0.25 ± 0.03 | 0.75 ± 0.10 | 0.24 ± 0.05 |
| 43-1 | 0.46 ± 0.09 | 0.58 ± 0.38 | 0.61 ± 0.30 |
| 43-3 | 0.74 ± 0.22 | 0.90 ± 0.25 | 0.54 ± 0.13 |
| 43-4 | 0.59 ± 0.17 | 0.94 ± 0.14 | 0.53 ± 0.15 |
| 44-1 | 0.70 ± 0.16 | 0.80 ± 0.26 | 0.59 ± 0.17 |
| 44-3 | 0.38 ± 0.17 | 0.41 ± 0.24 | 0.78 ± 0.29 |
| 44-5 | 0.75 ± 0.10 | 0.90 ± 0.25 | 0.44 ± 0.36 |
| 44-6 | 0.21 ± 0.09 | 0.90 ± 0.65 | 0.24 ± 0.05 |
| 45-5 | 0.49 ± 0.09 | 1.04 ± 0.22 | 0.30 ± 0.05 |
| 45-6 | 0.68 ± 0.31 | 0.62 ± 0.07 | 0.43 ± 0.38 |
| Mean | 0.41 | 0.74 | 0.42 |
| Standard deviation | 0.22 | 0.31 | 0.23 |

## Table I-12. Scientific Names of Organisms Collected, Gulf of the Farallones, 1973-1974

- Phylum Protozoa
  - Class Sarcodina
    - unidentified nonionid

- Phylum Coelenterata
  - Class Hydrozoa
    - unidentified bougainvillid
    - unidentified campanularid
    - unidentified halecid
    - unidentified hydrozoan
  - Class Anthozoa
    - unidentified alcyonarian
    - unidentified anthozoan

- Phylum Platyhelminthes
  - Class Turbellaria
    - unidentified turbellarian

- Phylum Nemertea
  - unidentified nemertean

- Phylum Annelida
  - Class Polychaeta
    - Family Aphroditidae
      - *Aphrodita* sp.
    - Family Polynoidae
      - *Harmothoe lunulata*
      - *Harmothoe priops*
      - *Harmothoe* sp. A.
      - *Harmothoe* sp.
      - *Lepidasthenia interrupta*
      - *Lepidasthenia* sp.
      - unidentified polynoid
    - Family Sigalionidae
      - *Pholoe minuta*
      - *Sthenelais verruculosa*
      - *Thalenessa spinosa*
      - unidentified sigalionid
    - Family Phyllodocidae
      - *Anaitides* sp.
      - *Eteone californica*
      - *Eteone dilatae*
      - *Eteone* sp.
      - *Eumida* cf. *E. bifoliata*
      - *Eumida* sp.
      - *Phyllodoce* sp. A
      - unidentified phyllodocid
    - Family Hesionidae
      - *Gyptis brevipalpa*
      - *Hesionella mccullochae*
      - unidentified Hesionid
      - hesionid sp. A

## Table I-12. Scientific Names of Organisms Collected, Gulf of the Farallones, 1973-1974 (continued)

- Family Pilargidae
  - *Pilargis* sp.
  - *Sigambra bassi*
- Family Syllidae
  - *Autolytus* sp.
  - *Syllides* sp. A
  - *Typosyllis* sp. A
  - unidentified syllids
- Family Nereidae
  - *Nereis* sp.
  - unidentified nereid
- Family Nephtyidae
  - *Nephtys caecoides*
  - *Nephtys cornuta franciscana*
  - *Nephtys* sp. (juveniles)
- Family Glyceridae
  - *Glycera americana*
  - *Glycera convoluta*
  - *Glycera tenuis*
  - *Glycera* sp.
- Family Goniadidae
  - *Glycinde polygnatha*
  - *Goniada maculata*
  - *Goniada* sp.
- Family Onuphidae
  - *Nothria elegans*
  - unidentified onuphid
- Family Lumbrineridae
  - *Lumbrineris californiensis*
  - *Lumbrineris* cf. L. *tetraura*
  - *Lumbrineris* sp.
- Family Orbiniidae
  - *Haploscoloplos elongatus*
  - *Phylo felix*
  - *Scoloplos armiger*
  - *Scoloplos* sp.
  - unidentified orbiniid
- Family Paraonidae
  - *Aedicira* sp.
  - *Aricidea longobranchiata*
  - *Aricidea* ? *wassi*
  - *Aricidea* sp.
  - *Paraonides platybranchia*
  - unidentified paraonid
- Family Spionidae
  - ? *Nerinides* sp.
  - *Paraprionospio pinnata*
  - *Prionospio cirrifera*
  - *Prionospio pygmaeus*
  - *Prionospio* sp.
  - *Spiophanes bombyx*
  - *Spiophanes missionensis*
  - *Spiophanes* sp. A
  - *Spiophanes* sp.

## Table I-12. Scientific Names of Organisms Collected, Gulf of the Farallones, 1973-1974 (continued)

- Family Spionidae (continued)
  - unidentified spionid
- Family Magelonidae
  - *Magelona sacculata*
  - *Magelona pitelkai*
  - unidentified magelonid
- Family Chaetopleridae
  - *Telepsayus costarum*
- Family Cirratulidae
  - *Chaetozone setosa*
  - *Chaetozone* sp. A
  - *Chaetozone* sp. B
  - *Tharyx* sp.
- Family Opheliidae
  - *Armandia brevis*
  - *Ophelia assimilis*
  - *Ophelia* sp.
  - *Travisia gigas*
  - *Travisia* spp.
  - unidentified opheliid
- Family Capitellidae
  - *Capitita ambiseta*
- Family Maldanidae
  - *Axiothella rubrocincta*
  - unidentified maldanid
- Family Oweniidae
  - *Owenia collaris*
  - *Owenia* sp.
- Family Pectinariidae
  - *Pectinaria californiensis*
  - unidentified pectinariid
- Family Ampharetidae
  - *Ampharete* cf *A. labrops*
  - *Ampharete labrops*
  - *Ampharete* sp.
  - *Ampharete* sp. A
  - *Anobothrus* sp.
  - unidentified ampharetid
- Family Terebellidae
  - *Amaeana occidentalis*
  - *Pista cristata*
  - *Pista fasciata*
  - *Pista* sp.
  - *Streblosoma* sp.
  - unidentified terebellid
- Family Sabellidae
  - *Euchone incolor*
  - ? *Euchone* sp.
  - *Oriopsis* sp. A
  - *Pseudopotamilla* sp.
  - unidentified sabellid

Table I-12. Scientific Names of Organisms Collected,
Gulf of the Farallones, 1973-1974 (continued)

- Phylum Arthropoda
  - Class Crustacea
    - Subclass Ostracoda
      - *Cylindroleberis mariae*
      - *Cytherella* sp. B
      - *Euphilomedes carcharodonta*
      - *Euphilomedes oblonga*
      - *Euphilomedes* sp.
      - unidentified ostracods
    - Subclass Cirripedia
      - *Balanus* sp.
    - Subclass Malacostraca
      - Order Mysidacea
        - unidentified mysids
      - Order Cumacea
        - *Diastylopsis* sp.
        - *Hemilamprops californica*
      - Order Isopoda
        - *Ancinus daltonae*
        - *Ancinus* sp.
        - *Atylus tridens*
        - *Austrosignum tillerae*
        - *Edotea sublittoralis*
        - *Edotea* sp.
        - *Haliophasma geminata*
        - *Pleurogonium rubicundum*
        - *Pleurogonium* sp.
        - *Synidotea* sp.
        - *Tecticeps pugettensis*
        - unidentified idotheid
      - Order Amphipoda
        - Family Ampeliscidae
          - *Ampelisca compressa*
          - *Ampelisca cristata*
          - *Ampelisca macrocephala*
          - *Ampelisca* sp.
        - Family Aoridae
          - *Aoroides columbiae*
          - unidentified aorids
        - Family Argissidae
          - *Argissa hamatipes*
        - Family Atylidae
          - *Atylus tridens*
        - Family Corophidae
          - *Corophium* sp.
        - Family Haustoriidae
          - *Eohaustorius sencillus*
          - *Eohaustorius* sp.
        - Family Isaeidae
          - *Gammaropsis mamolus*
          - *Photis brevipes*
          - *Photis californica*
          - *Photis chiconola*
          - *Photis* sp.

## Table I-12. Scientific Names of Organisms Collected, Gulf of the Farallones, 1973-1974 (continued)

- Family Isaeidae (continued)
  - *Protomedeia* cf. *P. articulata*
  - *Protomedeia* cf. *P. penates*
  - *Protomedeia zotea*
  - *Protomedeia* sp.
  - unidentified isaeid
- Family Ischyroceridae
  - *Ischyrocerus anguipes*
- Family Liljeborgiidae
  - *Listriella diffusa*
- Family Oedicerotidae
  - *Monoculodes spinipes*
  - *Synchelidium shoemakeri*
  - *Synchelidium* sp.
  - unidentified oedicerotid
- Family Phoxocephalidae
  - *Metaphoxus* sp.
  - *Paraphoxus daboius*
  - *Paraphoxus epistomus*
  - *Paraphoxus fatigans*
  - *Paraphoxus lucubrans*
  - *Paraphoxus obtusidens*
  - *Paraphoxus vigitegus*
  - *Paraphoxus* sp.
- Family Caprellidae
  - *Caprella* sp.

- Order Decapoda
  - *Cancer magister*
  - *Crago alaskensis elongata*
  - *Crago stylirostris*
  - *Pagurus ochotensis*
  - *Pagurus* sp.
  - unidentified pagurid
  - *Pinnixa* sp.
  - unidentified branchyuran

- Phylum Molluska
  - Class Gastropoda
    - unidentified gastropods
    - Subclass Prosobranchia
      - Order Neogastropoda
        - Family Olividae
          - *Olivella biplicata*
          - *Olivella pycna*
          - *Olivella* sp.
        - Family Nassariidae
          - *Nassarius perpinguis*
          - *Nassarius* sp.
        - Family Columbellidae
          - *Amphissa bicolor*
          - *Mitrella* sp.
        - Family Scaphandridae
          - *Cylichna alba*
          - *Cylichna* sp.
        - Family Turridae
          - *Mangelia* sp.

## Table I-12. Scientific Names of Organisms Collected, Gulf of the Farallones, 1973-1974 (continued)

- Subclass Ospithobranchia
  - Order Tectibranchia
    - Family Acteonidae
      - *Rictaxis punctocoelatus*
    - Family Gasteropteridae
      - *Gasteropteron pacifica*
    - Family Pyramidellidae
      - *Odostomia* sp.
      - *Turbonilla* sp.
- Class Pelecypods
  - unidentified pelecypod
  - Order Protobranchia
    - Family Nuculanidae
      - *Nuculana* sp.
      - unidentified nuculanids
  - Order Filibranchia
    - Family Mytilidae
      - unidentified mytilid
  - Order Eulamellibranchia
    - Family Tellinidae
      - *Macoma nasuta*
      - *Macoma* sp. A
      - *Macoma* sp.
      - *Tellina bodegensis*
      - *Tellina modesta*
    - Family Solenidae
      - *Siliqua* sp.
      - *Solen* sp.
      - unidentified solenids
    - Family Mactridae
      - *Mactra* sp.
    - Family Veneridae
      - *Chione* sp.
      - *Protothaca* sp.
      - unidentified venerids
    - Family Lucinidae
      - *Lucina* sp.
      - unidentified lucinids
    - Family Lyonsiidae
      - *Lyonsia* sp.
    - Family Thyasiridae
      - *Axinopsida serricata*
    - Family Montacutidae
      - *Mysella* sp.
    - Family Cooperellidae
      - *Cooperella subdiaphana*
    - Family Pandoridae
      - *Pandora punctata*
- Class Scaphopoda
  - *Cadalus fusiformis*
  - *Cadalus* sp.
  - *Dentalium* sp.
  - unidentified scaphopods

Table I-12. Scientific Names of Organisms Collected, Gulf of the Farallones, 1973-1974 (continued)

Phylum Echinodermata
  Class Ophiuroidea
      *Amphiodia* sp.
      unidentified ophiuroideans
  Class Echinoidea
      *Dendraster excentricus*
      *Dendraster* sp.
      unidentified echinoidean
  Class Holothuroidea
      unidentified holothuroideans
  Phylum Phoronida
      unidentified phoronids

Phylum Hemichordata
  Class Enteropneusta
      unidentified enteropneustans

# Table I-13. Total Number of Individuals of Each Species Collected at Each Station in July 1973

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Protozoa | | | | | | | | | | | | | | | | | | | | | | |
| nonionid | - | P | P | - | - | P | - | P | P | P | - | P | P | - | P | - | - | - | - | P | - | P |
| Coelenterata | | | | | | | | | | | | | | | | | | | | | | |
| alcyonarion | | | | | | | | | | | | | | | | | | | | | | |
| anthozoan | | | | | | | | | | | | | | | | | | | | | | |
| bougainvillid | | | | | | | | | | | | | | | | | | | | | | |
| campanularid | | | | | | | | | | | | | | | | | | | | | | |
| halecid | | | | | | | | | | | | | | | | | | | | | | |
| hydrozoan | | | | | | | | | | | | | | | | | | | | | | |
| Platyhelminthes | | | | | | | | | | | | | | | | | | | | | | |
| turbellarian | - | - | - | - | - | - | - | - | - | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - |
| Nemertea | | | | | | | | | | | | | | | | | | | | | | |
| nemertean | - | 1 | - | 4 | 3 | - | - | 3 | 1 | 4 | 1 | 2 | 5 | - | 8 | 1 | - | - | - | 1 | 1 | 1 |
| Annelida | | | | | | | | | | | | | | | | | | | | | | |
| *Aedicira* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Amaeana occidentalis* | - | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| *Ampharete* cf. *labrops* | | | | | | | | | | | | | | | | | | | | | | |
| *Ampharete labrops* | | | | | | | | | | | | | | | | | | | | | | |
| *Ampharete* sp | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Ampharete* sp A | | | | | | | | | | | | | | | | | | | | | | |
| ampharetid | - | - | - | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| *Analtides* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Anobothrus* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Aphrodita* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Aricidea longobranchiata* | - | - | - | 1 | - | - | - | - | - | 1 | - | - | 1 | - | 1 | - | - | - | - | - | - | - |
| *Aricidea* ? *wassi* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| *Aricidea* sp | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - |
| *Armandia brevis* | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 | 9 | - | - | - | - | - | - | - | - |
| *Autolytus* sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - | 2 | - | - | - | - |
| *Axiothella rubrocincta* | | | | | | | | | | | | | | | | | | | | | | |
| *Capitita ambiseta* | 1 | 12 | 12 | 15 | 24 | 7 | 2 | 26 | 22 | 18 | 7 | 29 | 59 | 3 | 23 | - | 2 | - | 1 | 9 | - | 1 |
| *Chaetozone setosa* | | | | | | | | | | | | | | | | | | | | | | |
| *Chaetozone* sp A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 3 | 3 | 15 | - | 2 | 6 |
| *Chaetozone* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Eteone californica* | | | | | | | | | | | | | | | | | | | | | | |
| *Eteone dilatae* | 1 | - | - | - | - | - | - | - | 3 | 1 | 1 | - | - | - | - | - | - | - | - | 1 | - | - |
| *Eteone* sp | - | 1 | - | - | - | 2 | - | - | 7 | 1 | 5 | 2 | - | 1 | 1 | - | - | - | - | - | - | 2 |
| *Euchone incolor* | - | - | 1 | 4 | 2 | 1 | - | 3 | 2 | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| *Euchone* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Eumida* cf. *E. bifoliara* | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Eumida* sp. | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| *Glycera americana* | | | | | | | | | | | | | | | | | | | | | | |
| *Glycera convoluta* | 3 | 1 | 2 | 4 | - | 3 | - | 1 | - | 2 | 3 | - | 5 | 3 | 2 | - | 1 | - | 2 | - | - | - |
| *Glycera tenuis* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| *Glycera* sp | 11 | - | - | - | 3 | 2 | - | 1 | 2 | - | 2 | - | 4 | - | - | - | 3 | - | - | - | - | 3 |
| *Glycinde polygnatha* | 18 | 29 | 23 | 28 | 12 | 12 | 69 | 12 | 31 | 68 | 57 | 26 | 43 | 52 | 141 | 13 | 18 | - | 11 | 30 | - | 39 |
| *Goniada maculata* | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Goniada* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Gyptis brevipalpa* | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 | - | - | 1 |

## Table I-13. Total Number of Individuals of Each Species Collected at Each Station in July 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annelida contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Haploscoloplos elongatus | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | 3 | - | - |
| Harmothoe lunulata | | | | | | | | | | | | | | | | | | | | | | |
| Harmothoe priops | | | | | | | | | | | | | | | | | | | | | | |
| Harmothoe sp | | | | | | | | | | | | | | | | | | | | | | |
| Harmothoe sp A | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - |
| Hesionella mccullochae | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - | - | - | - | - |
| hesionid | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 |
| hesionid sp A | | | | | | | | | | | | | | | | | | | | | | |
| Lepidasthenia interrupta | | | | | | | | | | | | | | | | | | | | | | |
| Lumbrineris califoriensis | | | | | | | | | | | | | | | | | | | | | | |
| Lumbrineris cf. tetraura | 3 | 4 | - | - | - | - | - | - | 3 | 3 | 6 | - | - | - | - | - | - | - | 1 | - | - | - |
| Lumbrineris sp. | 2 | 1 | - | - | - | - | - | - | 1 | - | 1 | - | - | 2 | - | - | - | - | - | 1 | - | - |
| magelonid | | | | | | | | | | | | | | | | | | | | | | |
| Magelona pitelkai | 1 | 2 | - | 3 | - | 2 | - | - | 9 | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| Magelona sacculata | 1 | 2 | - | 1 | 3 | 2 | - | - | 3 | 2 | 3 | 1 | 4 | 2 | 2 | 4 | 3 | - | 3 | 1 | - | 8 |
| Magelona sp | 2 | - | - | - | - | - | - | 3 | 2 | 2 | - | - | 2 | 3 | - | - | - | - | - | - | - | - |
| maldanid | | | | | | | | | | | | | | | | | | | | | | |
| Nephtys caecoides | 7 | 9 | 19 | 33 | 29 | 14 | 18 | 25 | 7 | 6 | 17 | 32 | 63 | 6 | 45 | 27 | 18 | 3 | 43 | 7 | 1 | 32 |
| Nephtys cornuta franciscana | 6 | 22 | 12 | 8 | 15 | 5 | 2 | 21 | 22 | 15 | 13 | 15 | 25 | 2 | 1 | - | - | - | - | 8 | - | - |
| Nephtys sp | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - |
| nereid | - | 1 | - | 1 | - | - | - | - | 1 | 1 | - | - | - | - | 1 | - | - | - | 1 | - | - | - |
| Nereis sp | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ? Nerinides sp | | | | | | | | | | | | | | | | | | | | | | |
| Nothria elegans | 37 | 18 | 5 | 29 | 3 | 3 | 19 | 8 | 22 | 35 | 18 | 8 | - | 13 | 16 | - | 3 | - | - | - | - | - |
| onuphid | - | 1 | - | - | 1 | 4 | 2 | 8 | - | - | 2 | 4 | 7 | 1 | 1 | 1 | 2 | - | - | 5 | - | 1 |
| Ophelia assimilis | | | | | | | | | | | | | | | | | | | | | | |
| Ophelia sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| opheliid | | | | | | | | | | | | | | | | | | | | | | |
| orbiniid | - | - | 1 | - | 2 | - | 1 | - | - | - | - | 2 | 4 | 1 | - | 4 | 1 | - | 6 | - | - | 8 |
| Oriopsis sp A | | | | | | | | | | | | | | | | | | | | | | |
| Owenia collaris | 3 | 14 | - | - | - | - | - | - | 2 | - | 4 | 1 | - | - | 2 | - | - | - | - | - | - | - |
| Owenia sp | | | | | | | | | | | | | | | | | | | | | | |
| paraonid | - | - | - | - | - | 1 | - | - | - | - | - | 1 | 3 | - | - | 1 | - | - | 1 | 1 | - | - |
| Paraonoides platyhranchia | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 3 | - | - | 2 | - | - | 8 |
| Paraprionospio pinnata | - | - | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Pectinaria californiensis | | | | | | | | | | | | | | | | | | | | | | |
| pectinariid | | | | | | | | | | | | | | | | | | | | | | |
| Pholoe minuta | | | | | | | | | | | | | | | | | | | | | | |
| Phyllodoce sp A | 1 | - | 1 | 1 | - | - | 1 | - | - | 3 | - | - | - | - | - | - | 1 | - | - | - | - | - |
| phyllodocid | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | 1 | - | - | - | - | 1 | - | - | - |
| Phylo felix | 1 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pilargis sp | | | | | | | | | | | | | | | | | | | | | | |
| Pista cristata | | | | | | | | | | | | | | | | | | | | | | |
| Pista fasciata | | | | | | | | | | | | | | | | | | | | | | |
| Pista sp | | | | | | | | | | | | | | | | | | | | | | |
| polychaete, unident | 1 | 7 | - | - | - | 1 | 2 | 1 | - | - | - | - | 2 | 2 | - | 2 | - | - | 1 | 2 | - | - |

# Table I-13. Total Number of Individuals of Each Species Collected at Each Station in July 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annelida contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| polynoidid | - | - | - | - | - | - | - | - | - | - | 2 | - | 1 | - | - | - | - | - | - | - | - | - |
| Prionospio cirrifera | | | | | | | | | | | | | | | | | | | | | | |
| Prionospio pygmaeus | 3 | 1 | 6 | 2 | 10 | - | 1 | 3 | 5 | 12 | 2 | 2 | 11 | 5 | 6 | 1 | - | - | 4 | 5 | - | 12 |
| Prionospio sp | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Pseudopotamilla sp | | | | | | | | | | | | | | | | | | | | | | |
| sabellid | | | | | | | | | | | | | | | | | | | | | | |
| Scoloplos armiger | - | - | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Scoloplos sp | - | - | 3 | - | - | 2 | - | - | 1 | - | - | - | - | 2 | - | - | - | - | 5 | - | - | 2 |
| sigalionid | | | | | | | | | | | | | | | | | | | | | | |
| Sigambra bassi | | | | | | | | | | | | | | | | | | | | | | |
| spionid | - | - | - | - | - | 1 | - | 1 | - | 2 | - | 1 | - | - | - | - | - | - | - | - | - | 1 |
| Spiophanes bombyx | 36 | 1 | 13 | 17 | - | 1 | 52 | 3 | 2 | 95 | 13 | 4 | 2 | 12 | 101 | 25 | 109 | - | 72 | - | - | 18 |
| Spiophanes missionensis | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Spiophanes sp | - | - | - | - | - | - | 1 | 1 | 1 | - | - | - | 1 | - | 2 | - | - | - | - | - | - | - |
| Spiophanes sp A | 1 | 3 | 2 | - | 3 | 3 | - | - | 3 | - | 1 | 1 | 2 | - | - | - | - | - | - | 1 | - | - |
| Sthenelais verruculosa | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - |
| Streblosoma sp | | | | | | | | | | | | | | | | | | | | | | |
| Syllides sp A | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | 1 |
| syllids | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | 2 | - | - | - |
| Telepsayus costarum | | | | | | | | | | | | | | | | | | | | | | |
| terebellid | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Thalenessa spinosa | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Tharyx sp | - | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | 3 | 1 | 2 | - | - | - | - | 6 |
| Travisia gigas | - | - | - | 2 | 1 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Travisia spp | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Typosyllis sp A | 1 | - | - | - | 1 | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 |
| Arthropoda | | | | | | | | | | | | | | | | | | | | | | |
| Ampelisca compressa | - | - | - | - | 2 | - | - | 1 | - | - | - | - | 3 | - | - | - | - | - | - | - | - | - |
| Ampelisca cristata | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ampelisca macrocephala | - | - | - | 2 | - | 1 | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - |
| Ampelisca sp | | | | | | | | | | | | | | | | | | | | | | |
| Ancinus daltonae | - | 1 | - | 1 | 5 | - | - | - | - | 1 | - | - | - | - | 2 | 2 | - | - | - | - | - | 4 |
| Ancinus sp | - | 1 | 1 | - | 2 | 1 | 3 | - | - | - | - | 1 | 1 | 1 | - | - | 1 | - | 1 | 1 | - | 2 |
| aorids | - | 1 | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | - | - | - | - | 1 | - | - |
| Aoroides columbiae | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7 | - | - | - |
| Argissa hamatipes | - | - | - | - | - | - | - | - | - | - | 1 | 1 | - | - | 2 | - | - | - | - | - | - | - |
| Atylus tridens | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4 | - | - | - | - | - |
| Austrosignum tillerae | | | | | | | | | | | | | | | | | | | | | | |
| Balanus sp | | | | | | | | | | | | | | | | | | | | | | |
| brachyuran | | | | | | | | | | | | | | | | | | | | | | |
| Cancer magister | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - |
| Caprella sp | | | | | | | | | | | | | | | | | | | | | | |
| Corophium sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 2 | - | 1 | - |
| Crago alaskensis elongata | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Crago stylirostris | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - |

# Table I-13. Total Number of Individuals of Each Species Collected at Each Station in July 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arthropoda contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Cylindroleheris mariae | | | | | | | | | | | | | | | | | | | | | | |
| Cytherella sp B | | | | | | | | | | | | | | | | | | | | | | |
| Diastylopsis sp | 14 | 5 | 6 | – | 2 | 3 | 8 | 1 | 63 | 8 | 83 | 13 | 5 | 31 | 30 | 5 | 13 | – | 7 | 25 | – | 27 |
| Edotea suhlittoris | – | – | – | – | – | – | – | – | – | – | – | – | – | 2 | 1 | – | – | – | – | – | – | 3 |
| Edotea sp | | | | | | | | | | | | | | | | | | | | | | |
| Eohaustorius sencillus | 1 | – | – | – | – | – | – | – | – | – | – | 1 | – | – | 1 | 5 | – | 10 | 13 | – | 1 | – |
| Eohaustorius sp | | | | | | | | | | | | | | | | | | | | | | |
| Euphilomedes carcharodonta | 1 | 16 | 1 | 5 | 7 | 6 | 4 | 1 | – | 4 | 5 | 9 | 3 | 2 | 1 | 1 | – | – | – | – | – | 1 |
| Euphilomedes oblonga | | | | | | | | | | | | | | | | | | | | | | |
| Euphilomedes sp | 3 | – | 5 | – | 4 | 5 | 4 | 2 | 5 | – | – | – | 2 | – | – | – | – | – | – | – | – | – |
| Gammaropsis mamolus | | | | | | | | | | | | | | | | | | | | | | |
| Haliophasma geminata | – | 1 | – | 1 | – | – | – | – | – | 1 | 1 | – | – | – | 1 | – | – | – | – | – | – | – |
| Hemilamprops californica | 1 | – | 1 | 1 | 1 | 2 | 2 | 1 | – | – | – | – | – | – | – | – | 1 | – | – | 1 | – | – |
| idotheid | | | | | | | | | | | | | | | | | | | | | | |
| isaeid | – | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Ischyrocerus anguipes | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Listriella diffusa | | | | | | | | | | | | | | | | | | | | | | |
| Metaphoxus sp | | | | | | | | | | | | | | | | | | | | | | |
| Monoculodes spinipes | 2 | – | 1 | 3 | 3 | – | 1 | 2 | 1 | 1 | 1 | – | 1 | 1 | – | – | – | – | 1 | 1 | – | 5 |
| mysids | | | | | | | | | | | | | | | | | | | | | | |
| oedocerotid | | | | | | | | | | | | | | | | | | | | | | |
| ostracods | – | – | – | – | – | – | – | – | – | – | – | 3 | – | – | – | – | – | – | – | – | – | – |
| pagurid | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 4 | – | 1 | 5 | – | – | 1 |
| Pagurus ochotensis | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 2 | – |
| Pagurus sp | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus dabolus | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus epistomus | – | – | 1 | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Paraphoxus fatigans | 6 | 17 | 6 | 23 | 10 | 2 | 29 | 7 | 51 | 22 | 28 | 8 | 3 | 16 | 7 | – | – | – | – | 5 | – | – |
| Paraphoxus lucuhrans | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus ohtusidens | – | – | – | – | – | – | – | – | – | – | – | – | – | 1 | – | 1 | – | – | – | – | – | – |
| Paraphoxus vigitegus | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus sp | 8 | – | 2 | – | – | – | 8 | – | – | – | – | – | 3 | – | 1 | 4 | – | 2 | 7 | 3 | 1 | 1 |
| Photis brevipes | – | – | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Photis californica | | | | | | | | | | | | | | | | | | | | | | |
| Photis chiconola | – | – | – | – | 1 | – | 1 | – | – | 1 | – | – | – | – | 2 | 3 | – | – | – | – | – | – |
| Photis sp | – | 2 | – | 2 | – | 2 | 6 | – | – | 2 | 1 | 3 | – | 1 | – | 2 | – | – | 1 | – | – | 3 |
| Pinnixa sp | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Pleurogonium rubicundum | – | – | 1 | – | – | 1 | – | – | – | 1 | 1 | – | – | – | – | – | – | – | – | – | – | – |
| Pleurogonium sp | | | | | | | | | | | | | | | | | | | | | | |
| Protomedeia cf. P. articulata | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Protomedeia cf. P. penates | | | | | | | | | | | | | | | | | | | | | | |
| Protomedeia zotea | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Protomedeia sp | – | – | – | – | – | – | – | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – |
| Synchelidium shoemakeri | | | | | | | | | | | | | | | | | | | | | | |
| Synchelidium sp | 2 | – | – | 2 | 1 | – | 2 | 1 | – | – | 1 | – | – | 3 | 1 | – | – | 6 | – | 1 | 3 | – |
| Synidotea sp | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 1 | 1 | 1 | – | – | – | – | – |
| Tecticeps pugettensis | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 4 | – | – | – |

## Table I-13. Total Number of Individuals of Each Species Collected at Each Station in July 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Molluska | | | | | | | | | | | | | | | | | | | | | | |
| *Amphissa bicolor* | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| *Rictaxis punctocoelatus* | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Axinopsida serricata* | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| *Cadalus fusiformis* | | | | | | | | | | | | | | | | | | | | | | |
| *Cadalus* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Chione* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Cooperella subdiaphana* | | | | | | | | | | | | | | | | | | | | | | |
| *Cylichna alba* | | | | | | | | | | | | | | | | | | | | | | |
| *Cylichna* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Dentalium* sp | - | 1 | - | 1 | 1 | - | - | 2 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| gastropods | - | - | - | - | - | 1 | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - |
| *Gasteropteron pacifica* | | | | | | | | | | | | | | | | | | | | | | |
| *Lucina* sp | | | | | | | | | | | | | | | | | | | | | | |
| lucinids | - | - | 2 | 2 | 5 | - | - | 1 | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - |
| *Lyonsia* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Macoma nasuta* | | | | | | | | | | | | | | | | | | | | | | |
| *Macoma* sp | - | - | - | - | - | - | - | 1 | 2 | - | 3 | - | - | - | - | - | - | - | - | - | - | - |
| *Macoma* sp A | | | | | | | | | | | | | | | | | | | | | | |
| *Mactra* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Mangelia* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Mitrella* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Mysella* sp | 4 | 4 | - | 10 | - | 2 | 8 | 2 | 22 | 10 | 26 | - | 5 | - | 17 | - | - | - | - | 3 | - | - |
| mytilid | | | | | | | | | | | | | | | | | | | | | | |
| *Nassarius perpinguis* | | | | | | | | | | | | | | | | | | | | | | |
| *Nassarius* sp | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 |
| *Nuculana* sp | - | - | - | - | - | - | - | 2 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| nuculanid | | | | | | | | | | | | | | | | | | | | | | |
| *Odostomia* sp | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Olivella biplicata* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - | - | 2 | - |
| *Olivella pycna* | | | | | | | | | | | | | | | | | | | | | | |
| *Olivella* sp | - | - | 1 | 1 | - | - | - | 1 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - |
| *Pandora punctata* | | | | | | | | | | | | | | | | | | | | | | |
| pelecypods | 1 | 4 | - | - | 12 | 1 | 14 | 2 | - | 3 | 1 | 6 | 7 | 3 | - | - | - | - | - | 3 | - | - |
| *Polinices* sp | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| *Protothaca* sp | | | | | | | | | | | | | | | | | | | | | | |
| scaphopods | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Siliqua* sp | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | - | - |
| *Solen* sp | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| solenids | | | | | | | | | | | | | | | | | | | | | | |
| *Tellina bodegensis* | | | | | | | | | | | | | | | | | | | | | | |
| *Tellina modesta* | 2 | 1 | - | 1 | 1 | - | - | 3 | 3 | - | 2 | - | 2 | - | 3 | - | - | - | 1 | - | - | 2 |
| *Turbonilla* sp | | | | | | | | | | | | | | | | | | | | | | |
| venerids | | | | | | | | | | | | | | | | | | | | | | |
| Echinodermata | | | | | | | | | | | | | | | | | | | | | | |
| *Amphiodea* sp. | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 12 | - |
| *Dendraster excentricus* | - | - | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | 7 | - | - | - | - |
| *Dendraster* sp | | | | | | | | | | | | | | | | | | | | | | |
| echinoidean | | | | | | | | | | | | | | | | | | | | | | |
| holothuroideans | | | | | | | | | | | | | | | | | | | | | | |
| ophiuroideans | - | - | - | - | - | 2 | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - |
| Phoronida | | | | | | | | | | | | | | | | | | | | | | |
| phoronids | 1 | 3 | - | - | - | - | - | 2 | - | 5 | - | - | 6 | 1 | 1 | - | - | - | - | - | - | - |
| Hemichordata | | | | | | | | | | | | | | | | | | | | | | |
| enteropneustans | - | 1 | - | - | 3 | - | - | 1 | 1 | - | 3 | 1 | - | - | - | - | - | - | - | - | - | - |

# Table I-14. Total Number of Individuals of Each Species Collected at Each Station in October 1973

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Protozoa | | | | | | | | | | | | | | | | | | | | | | |
| nonionid | P | P | P | P | - | - | P | P | P | P | P | P | P | - | P | - | - | - | P | P | - | P |
| Coelenterata | | | | | | | | | | | | | | | | | | | | | | |
| alcyonarion | - | - | - | - | - | - | - | - | - | - | P | P | - | - | - | - | - | - | - | - | - | - |
| anthozoan | - | - | - | - | - | - | - | P | P | P | P | - | P | - | - | P | - | - | - | - | - | - |
| bougainvillid | - | - | - | - | - | P | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| campanularid | - | - | - | - | P | - | - | - | - | - | - | - | - | - | - | - | - | - | P | - | - | - |
| halecid | | | | | | | | | | | | | | | | | | | | | | |
| hydrozoan | - | - | - | - | - | - | - | P | - | - | - | - | - | - | - | - | - | - | - | P | - | - |
| Platyhelminthes | | | | | | | | | | | | | | | | | | | | | | |
| turbellarian | | | | | | | | | | | | | | | | | | | | | | |
| Nemertea | | | | | | | | | | | | | | | | | | | | | | |
| nemertean | 8 | 7 | 5 | 3 | - | 4 | 3 | 3 | 3 | 3 | 3 | 5 | 1 | 2 | 6 | 13 | 4 | - | 2 | 6 | 1 | 2 |
| Annelida | | | | | | | | | | | | | | | | | | | | | | |
| Aedicira sp | | | | | | | | | | | | | | | | | | | | | | |
| Amaeana occidentalis | - | - | - | - | 2 | 1 | 1 | 6 | 19 | 1 | 2 | 3 | - | - | - | 3 | - | - | - | 3 | - | - |
| Ampharete cf. labrops | | | | | | | | | | | | | | | | | | | | | | |
| Ampharete labrops | - | 1 | - | - | - | - | - | - | 2 | 3 | 2 | 1 | - | - | - | 16 | - | - | - | 1 | - | - |
| Ampharete sp | - | - | - | - | - | 1 | 1 | 1 | 1 | 7 | - | 3 | 2 | - | - | 2 | - | - | - | 4 | - | - |
| Ampharete sp A | | | | | | | | | | | | | | | | | | | | | | |
| ampharetid | - | - | - | 1 | - | - | 1 | - | 1 | - | - | 1 | - | - | - | - | - | - | - | 4 | - | - |
| Anaitides sp | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Anobothrus sp | - | - | - | - | - | - | - | - | 2 | 1 | - | - | - | - | - | 1 | - | - | - | - | - | - |
| Aphrodita sp | - | - | - | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Aricidea longobranchiata | 1 | 1 | - | - | - | 2 | - | 2 | - | - | - | - | - | - | 2 | - | - | - | - | 2 | - | - |
| Aricidea ? wassi | | | | | | | | | | | | | | | | | | | | | | |
| Aricidea sp | - | - | 2 | 2 | - | - | 1 | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| Armandia brevis | 13 | 14 | 1 | 2 | 2 | - | - | 1 | 7 | 30 | 13 | 7 | 1 | - | - | 15 | - | - | - | 4 | - | - |
| Autolytus sp | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Axiothella rubrocincta | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Capitita ambiseta | 11 | 12 | - | 8 | 6 | 8 | 8 | 2 | 104 | 2 | 20 | 9 | 4 | - | 3 | 6 | 1 | - | 2 | 36 | - | 1 |
| Chaetozone setosa | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | 2 | - | - | - | - |
| Chaetozone sp A | | | | | | | | | | | | | | | | | | | | | | |
| Chaetozone sp | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 3 | 4 | 8 | - | - | - | - | - |
| Eteone californica | | | | | | | | | | | | | | | | | | | | | | |
| Eteone dilatae | - | - | - | - | - | - | - | - | 4 | 2 | - | - | - | - | - | 1 | - | - | - | 1 | - | - |
| Eteone sp | 2 | - | 1 | 5 | - | 5 | - | 2 | 2 | 1 | 3 | 5 | 1 | - | 1 | 2 | - | - | - | 2 | - | - |
| Euchone incolor | | | | | | | | | | | | | | | | | | | | | | |
| Euchone sp | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Eumida cf. E. bifoliara | | | | | | | | | | | | | | | | | | | | | | |
| Eumida sp. | 6 | - | - | - | - | 1 | - | 2 | 5 | - | 1 | - | - | - | - | 2 | - | - | - | - | - | - |
| Glycera americana | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - |
| Glycera convoluta | 2 | - | - | 2 | 2 | 1 | - | 1 | - | - | 1 | 2 | - | - | 2 | - | 1 | - | - | 2 | - | 1 |
| Glycera tenuis | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Glycera sp | - | - | 1 | 1 | - | 1 | 1 | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - |
| Glycinde polygnatha | 22 | 26 | 19 | 17 | 25 | 15 | 29 | 10 | 49 | 20 | 14 | 18 | 10 | 3 | 14 | 27 | 1 | - | 4 | 10 | 1 | 3 |
| Goniada maculata | | | | | | | | | | | | | | | | | | | | | | |
| Goniada sp | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Gyptis brevipalpa | 3 | - | - | - | - | - | 1 | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - |

# Table I-14. Total Number of Individuals of Each Species Collected at Each Station in October 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annelida contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| *Haploscoloplos elongatus* | - | 1 | - | - | - | - | - | - | 3 | 3 | 1 | - | - | - | 1 | 3 | - | - | - | 3 | - | - |
| *Harmothoe lunulata* | 1 | - | - | 1 | - | - | - | - | 2 | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| *Harmothoe priops* | 1 | 1 | 2 | - | - | - | - | - | 1 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| *Harmothoe* sp | - | - | - | - | - | 2 | - | - | 7 | - | - | - | 4 | - | - | 3 | - | - | - | - | - | - |
| *Harmothoe* sp A | | | | | | | | | | | | | | | | | | | | | | |
| *Hesionella mccullochae* | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| hesionid | - | 1 | - | 1 | - | - | 2 | - | - | - | - | 1 | - | - | - | 1 | - | - | 1 | - | 1 | - |
| hesionid sp A | | | | | | | | | | | | | | | | | | | | | | |
| *Lepidasthenia interrupta* | - | - | - | 1 | - | - | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| *Lumbrineris califoriensis* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Lumbrineris* cf. *tetraura* | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| *Lumbrineris* sp. | | | | | | | | | | | | | | | | | | | | | | |
| mageleonid | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - |
| *Mageleona pitelkai* | | | | | | | | | | | | | | | | | | | | | | |
| *Mageleona sacculata* | 2 | - | 1 | 2 | 1 | 8 | - | - | 5 | 3 | 3 | 2 | 2 | 1 | - | 3 | - | - | 5 | 9 | - | 1 |
| *Mageleona* sp | 1 | 3 | - | 6 | 1 | 5 | - | 4 | 2 | - | - | 5 | 4 | - | - | - | 1 | - | - | 3 | - | - |
| maldanid | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Nephtys caecoides* | 6 | 1 | 33 | 25 | 16 | 24 | 26 | 11 | 11 | 9 | 18 | 19 | 15 | 12 | 9 | 25 | 3 | 1 | 10 | 26 | 6 | 20 |
| *Nephtys cornuta franciscana* | 31 | 36 | 41 | 37 | 18 | 39 | 9 | 64 | 278 | 126 | 32 | 91 | 36 | - | - | 108 | 7 | 1 | 3 | 191 | - | 1 |
| *Nephtys* sp | - | - | - | - | 1 | - | 1 | 2 | - | - | - | - | 3 | - | - | - | - | - | - | 2 | - | - |
| nereid | | | | | | | | | | | | | | | | | | | | | | |
| *Nereis* sp | | | | | | | | | | | | | | | | | | | | | | |
| ? *Nerinides* sp | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - |
| *Nothria elegans* | 17 | 1 | 8 | 7 | 5 | 6 | 12 | 1 | 29 | 25 | 10 | 13 | 3 | 3 | 4 | 12 | - | - | - | 5 | - | 2 |
| onuphid | 4 | 1 | - | - | 1 | - | 2 | - | - | - | 4 | 4 | - | - | - | - | - | - | - | 1 | - | 2 |
| *Ophelia assimilis* | | | | | | | | | | | | | | | | | | | | | | |
| *Ophelia* sp | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| opheliid | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - | - |
| orbiniid | - | - | - | - | - | - | - | - | - | - | - | 1 | 1 | - | - | - | - | - | - | - | - | - |
| *Oriopsis* sp A | | | | | | | | | | | | | | | | | | | | | | |
| *Owenia collaris* | 2 | - | - | - | - | - | - | - | 7 | 4 | 7 | 5 | - | - | - | 21 | - | - | 1 | 4 | - | - |
| *Owenia* sp | - | 1 | 1 | - | - | - | - | - | - | - | 3 | - | - | - | - | - | - | - | - | 1 | - | - |
| paraonid | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| *Paraonoides platybranchia* | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 1 | - | - | - | 7 | - | - | 1 |
| *Paraprionospio pinnata* | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Pectinaria californiensis* | 9 | - | - | - | 4 | 6 | - | - | 44 | 3 | 2 | 3 | 7 | - | - | 37 | - | - | - | 16 | - | - |
| pectinariid | - | 2 | 1 | 1 | - | - | 2 | 2 | - | - | 3 | 16 | - | - | - | - | - | - | - | 5 | - | - |
| *Pholoe minuta* | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Phyllodoce* sp A | - | - | - | - | - | 1 | - | - | 2 | - | - | 1 | - | - | 1 | 1 | - | - | - | - | - | 1 |
| phyllodocid | 1 | 3 | 3 | 1 | - | 1 | 2 | 1 | 1 | - | 3 | 2 | - | - | - | - | - | - | - | 2 | - | 1 |
| *Phylo felix* | | | | | | | | | | | | | | | | | | | | | | |
| *Pilargis* sp | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Pista cristata* | - | - | - | 1 | - | 1 | - | - | 3 | - | - | - | 3 | - | - | 1 | - | - | - | - | - | - |
| *Pista fasciata* | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| *Pista* sp | - | - | - | - | 1 | 1 | - | 2 | 4 | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| polychaete, unident | | | | | | | | | | | | | | | | | | | | | | |

## Table I-14. Total Number of Individuals of Each Species Collected at Each Station in October 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annelida contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| polynoidid | - | 1 | - | 1 | 2 | 1 | 2 | 2 | - | - | 1 | 2 | 2 | 1 | - | - | - | - | - | 2 | - | - |
| Prionospio cirrifera | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | 4 | 1 | - | - | 1 | - | - |
| Prionospio pygmaeus | 33 | 25 | 55 | 39 | 52 | 38 | 35 | 42 | 66 | 40 | 26 | 37 | 18 | - | 8 | 25 | 3 | 1 | 2 | 44 | - | 14 |
| Prionospio sp | | | | | | | | | | | | | | | | | | | | | | |
| Pseudopotamilla sp | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| sabellid | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Scoloplos armiger | 2 | - | - | - | 7 | 5 | - | - | - | 2 | - | - | - | 2 | - | 1 | 7 | - | 2 | 2 | - | 2 |
| Scoloplos sp | 1 | 1 | 2 | 3 | - | 2 | 3 | 4 | - | - | 2 | 1 | 3 | - | 5 | 1 | - | - | 12 | - | 3 | 3 |
| sigalionid | - | - | - | - | - | 1 | 1 | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - |
| Sigambra bassi | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| spionid | - | 1 | 4 | 7 | - | 1 | - | - | 1 | 3 | - | - | 3 | - | - | 2 | - | - | - | - | 1 | - |
| Spiophanes bombyx | 16 | 2 | 6 | 5 | 8 | 12 | 12 | 9 | 1 | 9 | 5 | 6 | 1 | 9 | 47 | 2 | - | - | 13 | 7 | 2 | 18 |
| Spiophanes missionensis | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Spiophanes sp | - | - | - | - | - | - | - | - | 4 | 2 | - | - | - | 21 | - | - | - | - | 1 | - | - | - |
| Spiophanes sp A | | | | | | | | | | | | | | | | | | | | | | |
| Sthenelais verruculosa | - | - | - | - | - | - | - | - | 1 | - | - | 1 | 1 | - | - | 1 | - | - | - | - | - | - |
| Streblosoma sp | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Syllides sp A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - | - | - | 5 | - | - | - |
| syllids | - | - | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | 1 |
| Telepsavus costarum | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| terebellid | - | - | 1 | 1 | 4 | 1 | - | 1 | - | - | - | 4 | 4 | - | - | - | - | - | - | 1 | - | - |
| Thalenessa spinosa | 1 | - | - | - | - | 1 | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Tharyx sp | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | 3 | - | 5 | - |
| Travisia gigas | - | - | 1 | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - |
| Travisia spp | | | | | | | | | | | | | | | | | | | | | | |
| Typosyllis sp A | - | - | 1 | 2 | 1 | - | 3 | - | - | - | 3 | - | 1 | - | 2 | - | - | - | - | 1 | - | - |
| Arthropoda | | | | | | | | | | | | | | | | | | | | | | |
| Ampelisca compressa | - | - | - | - | 3 | - | - | 2 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Ampelisca cristata | - | - | - | 25 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ampelisca macrocephala | - | - | - | - | 2 | - | - | - | 1 | - | - | - | 4 | - | - | - | - | - | - | - | - | - |
| Ampelisca sp | - | - | 1 | 7 | - | - | 1 | - | - | - | - | - | 1 | - | - | - | 2 | - | - | - | - | - |
| Ancinus daltonae | - | - | 1 | 1 | 4 | 1 | - | - | 5 | - | - | 1 | 1 | - | 3 | 1 | - | - | 2 | - | - | 2 |
| Ancinus sp | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| aorids | | | | | | | | | | | | | | | | | | | | | | |
| Aoroides columbiae | | | | | | | | | | | | | | | | | | | | | | |
| Argissa hamatipes | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 |
| Atylus tridens | | | | | | | | | | | | | | | | | | | | | | |
| Austrosignum tillerae | - | - | - | - | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - | - |
| Balanus sp | | | | | | | | | | | | | | | | | | | | | | |
| brachyuran | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - |
| Cancer magister | | | | | | | | | | | | | | | | | | | | | | |
| Caprella sp | | | | | | | | | | | | | | | | | | | | | | |
| Corophium sp | | | | | | | | | | | | | | | | | | | | | | |
| Crago alaskensis elongata | | | | | | | | | | | | | | | | | | | | | | |
| Crago stylirostris | | | | | | | | | | | | | | | | | | | | | | |

## Table I-14. Total Number of Individuals of Each Species Collected at Each Station in October 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arthropoda contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| *Cylindroleberis mariae* | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Cytherella* sp B | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Diastylopsis* sp | 42 | 7 | 8 | 1 | 3 | 3 | 2 | 9 | 42 | 14 | 8 | 6 | 1 | 1 | 6 | 29 | 5 | - | 96 | 75 | 2 | 12 |
| *Edotea sublittoris* | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - |
| *Edotea* sp | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - |
| *Eohaustorius sencillus* | - | - | - | 1 | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 12 | 9 | - | 5 | 2 |
| *Eohaustorius* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Euphilomedes carcharodonta* | 17 | 22 | 15 | 15 | 20 | 30 | 7 | 3 | 11 | 1 | 10 | 22 | 25 | 1 | 3 | 8 | - | - | - | 4 | - | 1 |
| *Euphilomedes oblonga* | | | | | | | | | | | | | | | | | | | | | | |
| *Euphilomedes* sp | 4 | 22 | 8 | 16 | 14 | 4 | 5 | 8 | 2 | 8 | - | 10 | 1 | - | 6 | 6 | 1 | - | - | - | - | 4 |
| *Gammaropsis mamolus* | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| *Haliophasma geminata* | - | - | - | - | - | - | - | 1 | - | - | 1 | - | - | - | - | 2 | - | - | - | 1 | - | - |
| *Hemilamprops californica* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - |
| idotheid | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| isaeid | - | - | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| *Ischyrocerus anguipes* | | | | | | | | | | | | | | | | | | | | | | |
| *Listriella diffusa* | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Metaphoxus* sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - |
| *Monoculodes spinipes* | 1 | - | 1 | 2 | 2 | 1 | - | - | 2 | - | - | 2 | - | - | 1 | - | 1 | - | 1 | - | 1 | - |
| mysids | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| oedocerotid | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - |
| ostracods | | | | | | | | | | | | | | | | | | | | | | |
| pagurid | | | | | | | | | | | | | | | | | | | | | | |
| *Pagurus ochotensis* | | | | | | | | | | | | | | | | | | | | | | |
| *Pagurus* sp | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Paraphoxus daboius* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Paraphoxus epistomus* | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| *Paraphoxus fatigans* | 36 | 53 | 31 | 38 | 28 | 21 | 41 | 4 | 93 | 37 | 24 | 66 | 4 | 10 | 1 | 14 | 4 | - | 7 | 78 | 1 | 6 |
| *Paraphoxus lucubrans* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| *Paraphoxus obtusidens* | | | | | | | | | | | | | | | | | | | | | | |
| *Paraphoxus vigitegus* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 5 | 1 | - | - | 1 |
| *Paraphoxus* sp | 1 | - | 7 | 2 | 4 | 1 | - | - | - | - | - | - | 3 | - | 4 | - | 2 | - | - | - | - | - |
| *Photis brevipes* | | | | | | | | | | | | | | | | | | | | | | |
| *Photis californica* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - |
| *Photis chiconola* | 6 | 2 | - | - | - | - | 2 | - | - | - | 5 | - | - | 1 | 2 | - | - | - | 2 | 2 | - | 4 |
| *Photis* sp | 7 | 8 | 6 | 4 | 1 | 3 | - | 3 | 4 | - | 4 | 1 | 3 | - | 15 | 3 | 1 | - | 3 | 1 | - | 17 |
| *Pinnixa* sp | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| *Pleurogonium rubicundum* | 3 | 3 | 3 | - | 1 | - | 3 | 1 | 6 | - | 3 | 1 | 1 | - | 1 | 1 | - | - | 1 | - | - | - |
| *Pleurogonium* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Protomedeia* cf. *P. articulata* | 6 | 3 | 1 | 1 | 1 | - | - | - | 1 | - | 1 | 1 | - | 1 | - | - | - | - | - | 2 | - | - |
| *Protomedeia* cf. *P. penates* | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Protomedeia zotea* | | | | | | | | | | | | | | | | | | | | | | |
| *Protomedeia* sp | | | | | | | | | | | | | | | | | | | | | | |
| *Synchelidium shoemakeri* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| *Synchelidium* sp | 1 | - | 1 | - | - | - | - | 1 | 2 | - | - | - | 1 | - | - | 1 | 1 | 11 | 1 | - | 1 | 1 |
| *Synidotea* sp | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 4 | 1 | - | - | - | - | - | - |
| *Tecticeps pugettensis* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 |

## Table I-14. Total Number of Individuals of Each Species Collected at Each Station in October 1973 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Molluska | | | | | | | | | | | | | | | | | | | | | | |
| Amphissa bicolor | | | | | | | | | | | | | | | | | | | | | | |
| Rictaxis punctocaelatus | | | | | | | | | | | | | | | | | | | | | | |
| Axinopsida serricata | | | | | | | | | | | | | | | | | | | | | | |
| Cadalus fusiformis | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Cadalus sp | | | | | | | | | | | | | | | | | | | | | | |
| Chione sp | | | | | | | | | | | | | | | | | | | | | | |
| Cooperella subdiaphana | | | | | | | | | | | | | | | | | | | | | | |
| Cylichna alba | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Cylichna sp | | | | | | | | | | | | | | | | | | | | | | |
| Dentalium sp | - | - | 1 | - | - | 1 | - | 4 | 2 | - | 1 | 1 | - | - | - | 1 | - | - | - | - | - | - |
| gastropods | 2 | 1 | 4 | - | 3 | 6 | 1 | - | 4 | - | 1 | 3 | 1 | - | - | 9 | - | - | 10 | 5 | - | - |
| Gasteropteron pacifica | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 9 | 1 | - | - | - | 8 | - | - |
| Lucina sp | - | 4 | - | - | - | 5 | - | - | 2 | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| lucinids | 2 | - | - | 1 | - | 1 | - | - | - | - | - | 1 | 1 | - | - | - | - | - | 1 | - | - | - |
| Lyonsia sp | - | - | - | - | 2 | - | - | - | 1 | 3 | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Macoma nasuta | | | | | | | | | | | | | | | | | | | | | | |
| Macoma sp | 1 | - | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Macoma sp A | | | | | | | | | | | | | | | | | | | | | | |
| Mactra sp | | | | | | | | | | | | | | | | | | | | | | |
| Mangelia sp | | | | | | | | | | | | | | | | | | | | | | |
| Mitrella sp | | | | | | | | | | | | | | | | | | | | | | |
| Mysella sp | 22 | 23 | 19 | 24 | 6 | 14 | 63 | 3 | 105 | 56 | 4 | 27 | 10 | 4 | 52 | 38 | 1 | - | 1 | 26 | 1 | 2 |
| mytilid | 2 | - | - | - | - | - | 2 | - | 1 | - | 5 | 1 | - | - | 1 | 22 | - | - | - | - | - | - |
| Nassarius perpinguis | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 | - |
| Nassarius sp | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Nuculana sp | - | - | - | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | 6 | - | - |
| nuculanid | 4 | 4 | 4 | 4 | - | - | 2 | 3 | 1 | 2 | - | 1 | 5 | - | - | 1 | 1 | - | - | 1 | - | - |
| Odostomia sp | - | - | - | - | 1 | 1 | - | - | - | - | - | 2 | 2 | - | - | - | - | - | - | 1 | - | - |
| Olivella biplicata | - | - | 3 | - | - | - | - | - | - | - | - | - | 1 | - | 1 | - | - | 3 | 32 | - | - | - |
| Olivella pycna | | | | | | | | | | | | | | | | | | | | | | |
| Olivella sp | - | 4 | 7 | 5 | - | 6 | 1 | 8 | 4 | 5 | - | 2 | - | 2 | 3 | - | - | - | - | 15 | - | - |
| Pandora punctata | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| pelecypods | 55 | 5 | - | 2 | 1 | 3 | 16 | 7 | 53 | 11 | 143 | 53 | 1 | - | 10 | 35 | 1 | - | - | 81 | - | 19 |
| Polinices sp | | | | | | | | | | | | | | | | | | | | | | |
| Protothaca sp | | | | | | | | | | | | | | | | | | | | | | |
| scaphopods | | | | | | | | | | | | | | | | | | | | | | |
| Siliqua sp | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Solen sp | | | | | | | | | | | | | | | | | | | | | | |
| solenids | | | | | | | | | | | | | | | | | | | | | | |
| Tellina bodegensis | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Tellina modesta | 68 | 70 | 16 | 30 | 21 | 12 | 30 | 15 | 228 | 131 | 58 | 124 | 15 | 34 | 55 | 318 | 14 | - | 15 | 179 | - | 28 |
| Turbonilla sp | 2 | 1 | - | 2 | - | - | - | - | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - |
| venerids | - | - | 3 | - | 1 | - | 2 | 1 | - | 1 | - | 3 | - | - | - | - | 2 | - | - | - | - | - |
| Echinodermata | | | | | | | | | | | | | | | | | | | | | | |
| Amphiodea urtica | | | | | | | | | | | | | | | | | | | | | | |
| Dendraster excentricus | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 8 | 1 | - | - | - |
| Dendraster sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4 | - | - | - | - |
| echinoidean | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| holothuroideans | 1 | - | - | - | - | - | - | - | 3 | 1 | - | - | - | - | - | 3 | - | - | - | 1 | - | - |
| ophiuroideans | 2 | 1 | 3 | 6 | 4 | - | 1 | 2 | 16 | 4 | 3 | 3 | 1 | 2 | 1 | 17 | 1 | 1 | - | 9 | - | - |
| **Phoronida** | | | | | | | | | | | | | | | | | | | | | | |
| **phoronids** | 1 | - | - | - | - | - | - | - | - | 2 | - | - | - | - | 1 | - | - | - | - | 1 | - | - |
| Hemichordata | | | | | | | | | | | | | | | | | | | | | | |
| enteropneustans | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

## Table I-15. Total Number of Individuals of Each Species Collected at Each Station in February 1974

| Species | Station | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Protozoa | | | | | | | | | | | | | | | | | | | | | | |
| nonionid | P | P | P | P | P | P | P | P | P | P | P | P | P | P | - | P | - | - | P | P | - | - |
| Coelenterata | | | | | | | | | | | | | | | | | | | | | | |
| alcyonarion | | | | | | | | | | | | | | | | | | | | | | |
| anthozoan | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | P | - | - | - |
| bougainvillid | - | - | - | - | - | - | - | P | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| campanularid | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | P | - | - | - |
| halecid | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | P | - | - | - | - | - |
| hydrozoan | - | - | - | - | - | - | - | - | P | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Platyhelminthes | | | | | | | | | | | | | | | | | | | | | | |
| turbellarian | | | | | | | | | | | | | | | | | | | | | | |
| Nemertea | | | | | | | | | | | | | | | | | | | | | | |
| nemertean | 2 | - | 1 | - | - | 1 | 8 | 4 | 1 | 7 | 6 | - | 1 | 2 | - | 1 | - | 1 | 1 | - | 1 | - |
| Annelida | | | | | | | | | | | | | | | | | | | | | | |
| Aedicira sp | | | | | | | | | | | | | | | | | | | | | | |
| Amaeana occidentalis | - | - | - | 3 | 4 | - | 4 | 2 | 29 | 1 | 2 | - | 1 | 2 | 2 | 1 | - | - | - | 10 | - | 1 |
| Ampharete cf. lahrops | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ampharete lahrops | | | | | | | | | | | | | | | | | | | | | | |
| Ampharete sp | | | | | | | | | | | | | | | | | | | | | | |
| Ampharete sp A | | | | | | | | | | | | | | | | | | | | | | |
| ampharetid | | | | | | | | | | | | | | | | | | | | | | |
| Anaitides sp | | | | | | | | | | | | | | | | | | | | | | |
| Anohothrus sp | | | | | | | | | | | | | | | | | | | | | | |
| Aphrodita sp | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Aricidea longohranchiata | 1 | 1 | 1 | - | - | 1 | - | - | 1 | 1 | - | 2 | 1 | - | 1 | - | - | - | - | - | - | - |
| Aricidea ? wassi | | | | | | | | | | | | | | | | | | | | | | |
| Aricidea sp | | | | | | | | | | | | | | | | | | | | | | |
| Armandia hrevis | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - |
| Autolytus sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Axiothella ruhrocincta | - | - | - | - | 1 | - | - | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Capitita amhiseta | 3 | 3 | 1 | 3 | 2 | - | 20 | 4 | 66 | 8 | 10 | - | - | 2 | 1 | - | - | - | - | 3 | - | 1 |
| Chaetozone setosa | | | | | | | | | | | | | | | | | | | | | | |
| Chaetozone sp A | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 3 | 4 | 1 | 2 | 1 | - | - | 1 | - |
| Chaetozone sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 4 | - | - | - | - |
| Eteone californica | | | | | | | | | | | | | | | | | | | | | | |
| Eteone dilatae | - | 2 | - | - | - | - | 2 | 1 | 6 | 1 | 1 | 1 | - | - | - | - | - | - | - | 1 | - | - |
| Eteone sp | - | - | - | - | 1 | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Euchone incolor | | | | | | | | | | | | | | | | | | | | | | |
| Euchone sp | | | | | | | | | | | | | | | | | | | | | | |
| Eumida cf. E. hifoliara | | | | | | | | | | | | | | | | | | | | | | |
| Eumlda sp. | | | | | | | | | | | | | | | | | | | | | | |
| Glycera americana | - | - | - | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Glycera convoluta | 2 | 1 | 1 | - | - | - | 1 | 2 | - | - | - | - | - | - | - | 1 | - | 1 | 1 | - | - | - |
| Glycera tenuis | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5 | 2 | - | - | - | - |
| Glycera sp | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Glycinde polygnatha | 8 | 12 | 6 | 9 | 5 | 3 | 17 | 2 | 16 | 11 | 6 | 9 | - | 2 | 3 | 2 | 1 | - | 5 | 3 | 3 | 1 |
| Goniada maculata | - | - | - | 1 | - | - | 1 | - | 1 | - | 1 | - | 1 | - | - | 1 | - | - | - | 1 | - | - |
| Goniada sp | | | | | | | | | | | | | | | | | | | | | | |
| Gyptis hrevipalpa | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |

## Table I-15. Total Number of Individuals of Each Species Collected at Each Station in February 1974 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annelida contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Haploscoloplos elongatus | 2 | 1 | - | 1 | 2 | - | 4 | 1 | 5 | 2 | 4 | - | - | - | - | - | - | - | - | 1 | - | - |
| Harmothoe lunulata | | | | | | | | | | | | | | | | | | | | | | |
| Harmothoe priops | | | | | | | | | | | | | | | | | | | | | | |
| Harmothoe sp | | | | | | | | | | | | | | | | | | | | | | |
| Harmothoe sp A | - | - | - | - | - | - | - | - | 3 | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Hesionella mccullochae | | | | | | | | | | | | | | | | | | | | | | |
| hesionid | | | | | | | | | | | | | | | | | | | | | | |
| hesionid sp A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | 1 | - |
| Lepidasthenia interrupta | | | | | | | | | | | | | | | | | | | | | | |
| Lumbrineris califoriensis | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Lumbrineris cf. tetraura | - | 1 | - | 1 | - | - | 6 | - | 1 | 10 | 4 | 2 | - | - | - | - | - | - | 1 | 1 | - | - |
| Lumbrineris sp. | | | | | | | | | | | | | | | | | | | | | | |
| magelonid | | | | | | | | | | | | | | | | | | | | | | |
| Magelona pitelkai | 2 | 1 | 3 | 2 | - | 3 | 2 | 5 | - | - | 3 | 2 | 1 | - | - | - | - | - | - | - | - | 2 |
| Magelona sacculata | - | - | - | 1 | 2 | 1 | - | 1 | 3 | - | - | 1 | 1 | - | - | - | - | 3 | 1 | 2 | - | 1 |
| Magelona sp | | | | | | | | | | | | | | | | | | | | | | |
| maldanid | | | | | | | | | | | | | | | | | | | | | | |
| Nephtys caecoides | 3 | 5 | 17 | 6 | 8 | 7 | 2 | 6 | 3 | 2 | 5 | 3 | 2 | 6 | 5 | 12 | 5 | 2 | 5 | 1 | 1 | 3 |
| Nephtys cornuta franciscana | 1 | 1 | - | - | - | - | 3 | 2 | 14 | 1 | 1 | 4 | - | - | - | - | - | - | - | 1 | - | - |
| Nephtys sp | | | | | | | | | | | | | | | | | | | | | | |
| nereid | | | | | | | | | | | | | | | | | | | | | | |
| Nereis sp | | | | | | | | | | | | | | | | | | | | | | |
| ? Nerinides sp | | | | | | | | | | | | | | | | | | | | | | |
| Nothria elegans | 10 | 6 | 10 | 8 | 2 | 1 | 15 | 2 | 2 | 11 | 5 | 4 | - | 6 | 1 | 1 | - | 1 | - | - | - | 1 |
| onuphid | | | | | | | | | | | | | | | | | | | | | | |
| Ophelia assimilis | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - |
| Ophelia sp | | | | | | | | | | | | | | | | | | | | | | |
| opheliid | | | | | | | | | | | | | | | | | | | | | | |
| orbiniid | | | | | | | | | | | | | | | | | | | | | | |
| Oriopsis sp A | - | 1 | - | 3 | 2 | 2 | 2 | 7 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Owenia collaris | - | - | - | - | - | - | 4 | - | 3 | 4 | 2 | 5 | - | - | - | - | - | - | - | - | - | - |
| Owenia sp | | | | | | | | | | | | | | | | | | | | | | |
| paraonid | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Paraonoides platybranchia | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 1 | - | - | - | - | - | - |
| Paraprionospio pinnata | | | | | | | | | | | | | | | | | | | | | | |
| Pectinaria californiensis | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| pectinariid | | | | | | | | | | | | | | | | | | | | | | |
| Pholoe minuta | - | - | - | - | - | - | - | - | 3 | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Phyllodoce sp A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| phyllodocid | | | | | | | | | | | | | | | | | | | | | | |
| Phylo felix | | | | | | | | | | | | | | | | | | | | | | |
| Pilargis sp | | | | | | | | | | | | | | | | | | | | | | |
| Pista cristata | | | | | | | | | | | | | | | | | | | | | | |
| Pista fasciata | | | | | | | | | | | | | | | | | | | | | | |
| Pista sp | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| polychaete, unident | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |

## Table I-15. Total Number of Individuals of Each Species Collected at Each Station in February 1974 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annelida contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| polynoidid | | | | | | | | | | | | | | | | | | | | | | |
| Prionospio cirrifera | | | | | | | | | | | | | | | | | | | | | | |
| Prionospio pygmaeus | 4 | 4 | 1 | 7 | 2 | 14 | 15 | 6 | 7 | 14 | 18 | 15 | 5 | - | 4 | 4 | - | - | 1 | 6 | - | 4 |
| Prionospio sp | | | | | | | | | | | | | | | | | | | | | | |
| Pseudopotamilla sp | | | | | | | | | | | | | | | | | | | | | | |
| sabellid | | | | | | | | | | | | | | | | | | | | | | |
| Scoloplos armiger | - | 3 | 3 | 1 | 3 | 5 | - | 5 | 1 | - | - | 2 | 1 | 1 | 3 | 3 | 3 | 1 | 3 | - | - | - |
| Scoloplos sp | | | | | | | | | | | | | | | | | | | | | | |
| sigalionid | | | | | | | | | | | | | | | | | | | | | | |
| Sigambra bassi | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| spionid | | | | | | | | | | | | | | | | | | | | | | |
| Spiophanes bombyx | 28 | 20 | 11 | 8 | 5 | - | 5 | - | - | 8 | 8 | 5 | - | 12 | 23 | 18 | 44 | 1 | 25 | 2 | 38 | 2 |
| Spiophanes missionensis | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Spiophanes sp | | | | | | | | | | | | | | | | | | | | | | |
| Spiophanes sp A | - | - | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Sthenelais verruculosa | | | | | | | | | | | | | | | | | | | | | | |
| Streblosoma sp | | | | | | | | | | | | | | | | | | | | | | |
| Syllides sp A | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 | 2 | 1 | 1 | 1 | - | - | - | 1 |
| syllids | | | | | | | | | | | | | | | | | | | | | | |
| Telepsayus costarum | | | | | | | | | | | | | | | | | | | | | | |
| terebellid | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Thalenessa spinosa | - | - | - | - | - | 1 | - | - | - | - | 1 | - | 1 | 1 | 1 | - | - | - | - | - | - | - |
| Tharyx sp | | | | | | | | | | | | | | | | | | | | | | |
| Travisia gigas | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 1 | - | - | - | - | - | - | - |
| Travisia spp | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - |
| Typosyllis sp A | - | - | - | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Arthropoda | | | | | | | | | | | | | | | | | | | | | | |
| Ampelisca compressa | - | - | 3 | 4 | 1 | 4 | - | - | 1 | - | - | - | 12 | - | - | 1 | - | - | 1 | 2 | - | - |
| Ampelisca cristata | | | | | | | | | | | | | | | | | | | | | | |
| Ampelisca macrocephala | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 | - | 1 | 1 | - | - | - | 1 | - | - |
| Ampelisca sp | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Ancinus daltonae | - | 1 | - | - | - | - | - | - | - | 1 | - | 1 | - | - | - | 1 | 1 | - | - | 1 | - | - |
| Ancinus sp | - | - | 1 | 2 | - | - | - | - | 1 | - | 1 | - | - | - | 3 | 3 | 1 | - | 1 | - | - | - |
| aorids | | | | | | | | | | | | | | | | | | | | | | |
| Aoroides columbiae | | | | | | | | | | | | | | | | | | | | | | |
| Argissa hamatipes | | | | | | | | | | | | | | | | | | | | | | |
| Atylus tridens | | | | | | | | | | | | | | | | | | | | | | |
| Austrosignum tillerae | | | | | | | | | | | | | | | | | | | | | | |
| Balanus sp | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| brachyuran | | | | | | | | | | | | | | | | | | | | | | |
| Cancer magister | | | | | | | | | | | | | | | | | | | | | | |
| Caprella sp | | | | | | | | | | | | | | | | | | | | | | |
| Corophium sp | | | | | | | | | | | | | | | | | | | | | | |
| Crago alaskensis elongata | | | | | | | | | | | | | | | | | | | | | | |
| Crago stylirostris | | | | | | | | | | | | | | | | | | | | | | |

## Table I-15. Total Number of Individuals of Each Species Collected at Each Station in February 1974 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arthropoda contd. | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Cylindroleberis mariae | | | | | | | | | | | | | | | | | | | | | | |
| Cytherella sp B | | | | | | | | | | | | | | | | | | | | | | |
| Diastylopsis sp | - | - | - | - | - | - | - | - | 5 | 2 | - | - | - | - | - | - | 1 | - | - | 3 | 1 | - |
| Edotea sublittoris | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | - |
| Edotea sp | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Eohaustorius sencillus | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 4 | 1 | 7 | - | - | 6 | - | 3 | - |
| Eohaustorius sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 1 | - | 1 | - | - | - | - |
| Euphilomedes carcharodonta | 13 | 3 | 4 | 7 | 3 | 3 | 3 | - | 4 | 2 | 1 | 1 | 1 | 5 | 2 | 1 | - | - | 3 | 1 | - | - |
| Euphilomedes oblonga | - | - | 1 | - | - | 1 | - | - | - | - | - | - | 2 | - | - | - | - | - | 1 | - | - | - |
| Euphilomedes sp | 1 | - | 4 | 2 | - | - | - | - | 3 | 1 | - | 2 | 1 | - | - | 1 | - | - | - | 3 | - | - |
| Gammaropsis mamolus | | | | | | | | | | | | | | | | | | | | | | |
| Haliophasma geminata | - | 1 | - | - | - | - | 1 | - | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Hemilamprops californica | 1 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| idotheid | | | | | | | | | | | | | | | | | | | | | | |
| isaeid | | | | | | | | | | | | | | | | | | | | | | |
| Ischyrocerus anguipes | | | | | | | | | | | | | | | | | | | | | | |
| Listriella diffusa | | | | | | | | | | | | | | | | | | | | | | |
| Metaphoxus sp | | | | | | | | | | | | | | | | | | | | | | |
| Monoculodes spinipes | 1 | - | - | 2 | - | - | 1 | - | - | 1 | 1 | - | - | - | - | 1 | - | - | - | - | - | - |
| mysids | | | | | | | | | | | | | | | | | | | | | | |
| oedocerotid | | | | | | | | | | | | | | | | | | | | | | |
| ostracods | | | | | | | | | | | | | | | | | | | | | | |
| pagurid | | | | | | | | | | | | | | | | | | | | | | |
| Pagurus ochotensis | | | | | | | | | | | | | | | | | | | | | | |
| Pagurus sp | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 | 1 | - | - | - | - | - | - | 1 |
| Paraphoxus daboius | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus epistomus | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5 | - | - | - | - | - |
| Paraphoxus fatigans | 23 | 24 | 13 | 2 | 10 | 13 | 29 | 5 | 22 | 21 | 19 | 3 | 7 | 1 | 2 | 10 | - | - | 4 | 27 | 3 | 13 |
| Paraphoxus lucubrans | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus obtusidens | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus vigitegus | | | | | | | | | | | | | | | | | | | | | | |
| Paraphoxus sp | - | - | - | 4 | 1 | 4 | - | 2 | 4 | 5 | - | 5 | - | - | 3 | 1 | - | - | - | - | - | 1 |
| Photis brevipes | | | | | | | | | | | | | | | | | | | | | | |
| Photis californica | | | | | | | | | | | | | | | | | | | | | | |
| Photis chiconola | 1 | - | 4 | - | - | - | 1 | - | - | - | 2 | - | - | - | 1 | 1 | - | - | 2 | - | - | - |
| Photis sp | 5 | - | - | 2 | - | 1 | 2 | 1 | - | 1 | - | 1 | 2 | 2 | - | - | - | - | - | - | 2 | - |
| Pinnixa sp | | | | | | | | | | | | | | | | | | | | | | |
| Pleurogonium rubicundum | - | - | - | - | - | - | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pleurogonium sp | - | 1 | - | - | - | - | - | - | 4 | 4 | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Protomedeia cf. P. articulata | 1 | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| Protomedeia cf. P. penates | | | | | | | | | | | | | | | | | | | | | | |
| Protomedeia zotea | | | | | | | | | | | | | | | | | | | | | | |
| Protomedeia sp | | | | | | | | | | | | | | | | | | | | | | |
| Synchelidium shoemakeri | | | | | | | | | | | | | | | | | | | | | | |
| Synchelidium sp | - | - | 1 | - | - | - | 1 | - | - | 1 | - | - | - | 1 | - | - | 1 | - | - | - | 1 | - |
| Synidotea sp | | | | | | | | | | | | | | | | | | | | | | |
| Tecticeps pugettensis | | | | | | | | | | | | | | | | | | | | | | |

## Table I-15. Total Number of Individuals of Each Species Collected at Each Station in February 1974 (continued)

| Species | Station | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 39-1 | 39-2 | 39-4 | 40-3 | 40-4 | 40-6 | 41-2 | 41-5 | 41.5-3 | 42-1 | 42-2 | 42-4 | 42-6 | 43-1 | 43-3 | 43-4 | 44-1 | 44-3 | 44-5 | 44-6 | 45-5 | 45-6 |
| Molluska | | | | | | | | | | | | | | | | | | | | | | |
| Amphissa bicolor | | | | | | | | | | | | | | | | | | | | | | |
| Rictaxis punctocoelatus | | | | | | | | | | | | | | | | | | | | | | |
| Axinopsida serricata | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cadalus fusiformis | | | | | | | | | | | | | | | | | | | | | | |
| Cadalus sp | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Chione sp | - | - | - | - | - | - | - | - | 8 | - | 3 | - | - | - | - | - | - | - | - | - | - | - |
| Cooperella subdiaphana | - | - | - | - | - | - | 2 | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Cylichna alba | | | | | | | | | | | | | | | | | | | | | | |
| Cylichna sp | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Dentalium sp | - | 2 | 1 | 1 | - | 1 | - | - | 12 | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| gastropods | | | | | | | | | | | | | | | | | | | | | | |
| Gasteropteron pacifica | | | | | | | | | | | | | | | | | | | | | | |
| Lucina sp | - | - | - | 2 | - | - | 1 | 3 | - | - | - | - | 1 | - | - | - | - | - | - | 1 | - | - |
| lucinids | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Lyonsia sp | | | | | | | | | | | | | | | | | | | | | | |
| Macoma nasuta | - | - | - | - | - | - | - | - | 5 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| Macoma sp | | | | | | | | | | | | | | | | | | | | | | |
| Macoma sp A | 1 | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Mactra sp | 3 | - | - | - | - | - | 2 | - | 43 | - | 3 | - | - | - | - | - | - | - | - | - | - | - |
| Mangelia sp | - | - | - | 2 | - | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Mitrella sp | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Mysella sp | 5 | 7 | 12 | 11 | 13 | 19 | 26 | 14 | 49 | 20 | 25 | 5 | 19 | 16 | 5 | 6 | - | - | 1 | 18 | - | 3 |
| mytilid | - | 1 | - | - | - | - | - | - | 1 | 1 | 1 | - | - | - | - | - | - | - | 1 | - | - | - |
| Nassarius perpinguis | - | - | - | - | - | - | - | 1 | 2 | - | - | - | - | - | - | - | 1 | - | - | - | - | - |
| Nassarius sp | | | | | | | | | | | | | | | | | | | | | | |
| Nuculana sp | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| nuculanid | 1 | 1 | - | 1 | - | 1 | 1 | 4 | 2 | 2 | - | 1 | 1 | - | 2 | 2 | - | - | 1 | - | - | - |
| Odostomia sp | 2 | 2 | - | - | 1 | 4 | - | 1 | 1 | - | 1 | 2 | 1 | - | - | - | - | - | - | - | - | 1 |
| Olivella biplicata | | | | | | | | | | | | | | | | | | | | | | |
| Olivella pycna | - | 2 | 3 | 5 | - | 4 | 1 | 5 | 4 | 1 | - | 5 | 2 | 6 | 4 | 1 | 2 | 1 | 1 | - | 2 | 10 |
| Olivella sp | - | - | - | 1 | 7 | 1 | - | - | - | - | - | - | 1 | - | - | 4 | - | - | 1 | 2 | - | - |
| Pandora punctata | | | | | | | | | | | | | | | | | | | | | | |
| pelecypods | - | 1 | 1 | - | 2 | 1 | 1 | 1 | 3 | - | 1 | 1 | 1 | 5 | - | - | - | - | - | - | - | - |
| Polinices sp | | | | | | | | | | | | | | | | | | | | | | |
| Protothaca sp | 1 | - | - | - | 2 | - | - | - | 12 | 7 | - | - | - | - | - | - | - | - | - | - | - | - |
| scaphopods | | | | | | | | | | | | | | | | | | | | | | |
| Siliqua sp | | | | | | | | | | | | | | | | | | | | | | |
| Solen sp | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| solenids | | | | | | | | | | | | | | | | | | | | | | |
| Tellina bodegensis | | | | | | | | | | | | | | | | | | | | | | |
| Tellina modesta | 42 | 13 | 5 | 17 | 20 | 9 | 32 | 9 | 76 | 47 | 50 | 26 | 4 | 32 | 33 | 49 | 3 | 7 | 38 | 30 | - | 4 |
| Turbonilla sp | - | 1 | - | - | - | - | 1 | - | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| venerids | 2 | 7 | - | 1 | 1 | 4 | 9 | - | - | - | 1 | 1 | 1 | - | - | 2 | - | - | - | 1 | - | - |
| Echinodermata | | | | | | | | | | | | | | | | | | | | | | |
| Amphiodea sp. | - | - | - | - | - | 1 | - | - | - | 1 | - | - | - | - | - | 1 | - | - | 2 | - | - | - |
| Dendraster excentricus | - | - | - | 1 | 1 | - | - | 1 | 1 | 1 | 2 | 5 | - | 1 | 3 | 2 | - | - | - | - | - | - |
| Dendraster sp | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | 1 | 3 | - | - |
| echinoidean | | | | | | | | | | | | | | | | | | | | | | |
| holothuroideans | | | | | | | | | | | | | | | | | | | | | | |
| Phoronida | | | | | | | | | | | | | | | | | | | | | | |
| phoronids | 1 | - | - | - | - | - | - | 1 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Hemichordata | | | | | | | | | | | | | | | | | | | | | | |
| enteropneustans | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - |

# APPENDIX J

## Benthic Marine Resources at a Proposed Bay Disposal Site

- Species of Benthic Infauna Collected
- Heavy Metals in Fishes and Dungeness Crabs and Chlorinated Hydrocarbons in Fishes

# Species of Benthic Infauna Collected

### Table J-1. Organisms Collected with Sediments in San Francisco Bay Offshore from Islais Creek, 1972-1974

- Phylum Porifera
    - unidentified calcarean

- Phylum Coelenterata
    - Class Hydrozoa
        - *Clytia* (= *Phialidium*) sp
        - unidentified hydrozoan
    - Class Anthozoa
        - *Metridium* sp
        - *Stylatula* sp
        - *Stylatula elongata*
        - unidentified actinarian
        - unidentified alcinarian
        - unidentified anthozoan
        - unidentified edwardsiid
        - unidentified pennatulacean
        - unidentified zooanthurian

- Phylum Platyhelminthes
    - unidentified platyhelminth
    - unidentified turbellarian

- Phylum Nemertea
    - unidentified nemertean

- Phylum Aschelminthes
    - unidentified nematode

- Phylum Annelida
    - Class Oligochaeta
        - unidentified oligochaete
        - *Peloscolex* sp
    - Class Polychaeta
        - unidentified polychaete
        - Family Polynoidae
            - *Harmothoe* sp
            - *Harmothoe imbricata*
            - *Harmothoe priops*
            - unidentified polynoid
        - Family Polyodontidae
            - *Peisidice* sp
        - Family Sigalionidae
            - *Phloe glabra*

Table J-1. Organisms Collected with Sediments in San Francisco Bay Offshore from Islais Creek, 1972-1974 (continued)

Polychaeta (cont'd)

- Family Chrysopetalidae
  - *Paleanotus bellis*
  - unidentified chrysopetalid
- Family Phyllodocidae
  - *Anaitides longipes*
  - *Anaitides williamsi*
  - *Eteone* sp
  - *Eteone* c.f. *E. lighti*
  - *Eteone* c.f. *E. longa*
  - *Eumida sp*
  - unidentified phyllodocid
- Family Hesionidae
  - *Gyptis* sp
  - *Gyptis brevipalpa*
  - unidentified hesionid
- Family Pilargidae
  - *Pilargis* sp
  - *Pilargis berkeleyi*
  - *Pilargis maculata*
  - *Sigambra* sp
  - unidentified pilargid
- Family Syllidae
  - *Antolytus* sp
  - *Exogone* sp
  - *Exogone lourei*
  - *Sphaerosyllis* sp
  - *Sphaerosyllis* c.f. *S. hirsuita*
  - unidentified syllid
- Family Nereidae
  - *Nereis* ? *procera*
  - unidentified nereid
- Family Nephtyidae
  - *Nephtys* sp
  - *Nephtys* ? *caecoides*
  - *Nephtys cornuta*
  - *Nephtys cornuta franciscana*
  - *Nephtys ferruginea*
  - unidentified nephtyid
- Family Glyceridae
  - *Glycera* sp
  - *Glycera americana*
- Family Goniadidae
  - *Glycinde* spp
  - *Glycinde armigera*
  - *Glycinde polygnatha*
- Family Lumbrineridae
  - *Lumbrineris* sp
- Family Arabellidae
  - unidentified arabellid

Arthropoda (cont'd)

- Subclass Malacostraca
  - Order Cumacea
    - *Leptochelia* sp
    - *Leptochelia dubia*
    - unidentified cumacean
  - Order Chelifera
    - *Tanais* sp
    - unidentified cheliferan
  - Order Isopoda
    - *Asellota* sp
    - *Synidotea* sp
    - unidentified isopod
  - Order Amphipoda
    - unidentified amphipod
    - Family Gammaridae
      - *Melita* sp
      - unidentified gammaridean
    - Family Corophiidae
      - *Corophium* sp
      - *Corophium acherusicum*
      - *Corophium oaklandense*
    - Family Isaeidae
      - *Photis* sp
      - *Photis brevipes*
    - Family Stenothoidae
      - unidentified stenothoid
    - Family Lysianassidae
      - unidentified lysianassid
    - Family Caprellidae
      - *Caprella* sp
      - *Caprella californica*
      - *Caprella equilibra*
      - unidentified caprellid
    - Family Phonocephelidae
      - *Paraphoxus obtusidens*
    - Family Ampeliscidae
      - *Ampelisca* sp
      - *Ampelisca milleri*
    - Family Aoridae
      - *Aorides* sp
      - unidentified aorid
  - Order Decapoda
    - *Cancer* sp
    - *Cancer productus*
    - *Crago* sp
    - *Pagurus* sp
    - *Pinnixa* sp
    - *Pinnotheres concharum*
    - unidentified brachyuran
    - unidentified caride
    - unidentified decapod

Table J-1. Organisms Collected with Sediments in San Francisco Bay Offshore from Islais Creek, 1972-1974 (continued)

- Arthropoda (cont'd)
    - unidentified inachid
    - unidentified pagurid
    - Class Pycnogonida
        - *Phoxichilidium femoratum*
        - *Pycnogonum ricketitsi*

- Phylum Mollusca
    - Class Gastropoda
        - Subclass Opisthobranchia
            - Order Nudibranchia
                - unidentified nudibranch
            - Order Tectibranchia
                - Family Pyramidellidae
                    - *Odostomia* sp
                    - *Turbonilla* sp
        - Subclass Prosobranchia
            - Order Pectinibranchia
                - Family Marginellidae
                    - *Granulina margaritula*
                - Family Rissoidae
                    - unidentified rissoidid
                - Family Naticidae
                    - *Polinices draconis*
                - Family Nassariidae
                    - *Nassarius* sp
            - Order Aspidobranchia
                - Family Calyptracidae
                    - *Crepidula perforans*
    - Class Pelecypoda
        - unidentified pelecypod
        - Order Eumellibranchia
            - Family Veneridae
                - *Chione* sp
                - *Protothaca* sp
                - *Protothaca staminea*
                - *Saxidomus* sp
                - *Tapes* sp
                - *Tapes* c.f. *T. japonica*
                - *Tapes semidecussata*
                - *Transennella tantilla*
                - unidentified venerid
            - Family Tellinidae
                - *Macoma* spp
                - *Macoma inconspicua*
                - *Macoma nasuta*
                - *Tellina* sp
            - Family Cardiidae
                - *Cardium* (= *Clinocardium*) *nuttallii*
                - unidentified cardiid

Table J-1. Organisms Collected with Sediments in San Francisco Bay Offshore from Islais Creek, 1972-1974 (continued)

Mollusca (cont'd)

- Family Myidae
  - Cryptomya californica
  - Mya sp
  - Mya arenaria
- Family Pholadidae
  - Zirfaea sp
  - Zirfaea pilsbryi
  - unidentified pholadid
- Family Lyonsiidae
  - Lyonsia californica
- Family Mactridae
  - Mactra sp
  - Mactra californica
  - unidentified mactrid
- Family Montacutidae
  - Mysella sp
- Order Filibranchia
  - Family Mytilidae
    - Adula diegensis
    - Modiolus spp
    - Modiolus demissus
    - Modiolus rectus
    - Mytilus sp
    - Mytilus edulis
    - unidentified mytilid

Phylum Echinodermata

- Class Ophiuroidea
  - Amphioda urtica
  - unidentified ophiuroid
- Class Asteroidea
  - Pisaster brevispinus
  - Pisaster ochraceous

Phylum Bryozoa

- unidentified bryozoan
- Aeverrillia sp
- Alcyonidium sp
- Alcyonidium mammillatum
- Anguinella palmata
- Antropora tincta
- Barentsia sp
- Bugula sp
- Bugula pacifica

Table J-1. Organisms Collected with Sediments in San Francisco Bay Offshore from Islais Creek, 1972-1974 (continued)

Bryozoa (cont'd)

- *Crisia* sp
- *Electra crustulenta*
- *Electra crustulenta var Artica*
- *Filicrisia* sp
- *Hippothoa hyalina*
- *Parasmittina alaskensis*
- *Victorella* sp
- unidentified gymnolaemate
- unidentified cheilostomate
- unidentified cyclostomate

Phylum Phoronidea
- *Phoronis* sp
- unidentified phoronid

Phylum Chordata
- Class Ascidiacea
    - *Ciona* sp
    - unidentified ascidian
    - unidentified tunicate

# Heavy Metals in Fishes and Dungeness Crab and Chlorinated Hydrocarbons in Fishes

## Table J-2. Chlorinated Hydrocarbon Residues in Fishes and Dungeness Crabs Collected by Trawling in the Vicinity of the Southeast WPCP Outfall, South San Francisco Bay, 1974

| Sample | mg/kg Wet Weight | | | | |
|---|---|---|---|---|---|
| | Polychlorinated biphenyls | | Insecticides | | |
| | PCB 1254 | Others | DDE | DDT | Others |
| Survey date: 12/05/74<br>Sample No.: 23049<br>Species: English sole<br>Composite: 2 whole fishes | 0.20 | <0.1 | 0.01 | 0.05 | <0.01 |
| Survey date: 12/05/74<br>Sample No.: 23050<br>Species: Speckled sanddab<br>Composite: 18 whole fishes | 0.29 | <0.1 | 0.02 | 0.05 | <0.01 |
| Survey date: 3/18/74<br>Sample No.: 23051<br>Species: Speckled sanddab<br>Composite: 18 whole fishes | 0.26 | <0.1 | 0.01 | 0.09 | <0.01 |
| Survey date: 3/18/74<br>Sample No.: 23052<br>Species: English sole<br>Composite: 15 whole fishes | 0.79 | <0.1 | 0.04 | 0.09 | <0.01 |
| Survey date: 3/18/74<br>Sample No.: 23053<br>Species: English sole<br>Composite: 8 fillets | 0.13 | <0.1 | <0.1 | <0.1 | <0.1 |
| Survey date: 3/18/74<br>Sample No.: 23054<br>Species: Dungeness crab, ♀<br>Composite: leg flesh only | Insufficient sample for analysis | | | | |
| Survey date: 5/30/74<br>Sample No.: 23055<br>Species: Speckled sanddab<br>Composite: 9 whole fishes | 0.41 | <0.1 | 0.01 | 0.04 | <0.01 |
| Survey date: 5/30/74<br>Sample No.: 23056<br>Species: English sole<br>Composite: 5 whole fishes | 0.63 | <0.1 | 0.03 | 0.08 | <0.01 |
| Survey date: 5/30/74<br>Sample No.: 23057<br>Species: English sole<br>Composite: 4 fillets | 0.18 | <0.1 | <0.01 | <0.01 | <0.01 |
| Survey date: 5/30/74<br>Sample No.: 23058<br>Species: English sole<br>Composite: 2 fillets | 0.17 | <0.1 | <0.01 | <0.01 | <0.01 |

## Table J-3. Concentrations of Heavy Metals in Fishes and Dungeness Crab Collected by Trawling in the Vicinity of the Southeast WPCP Outfall, South San Francisco Bay, 1974

| Sample[a] | Metals, mg/kg wet weight | | | | | | | Metals, mg/kg dry weight | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cd | Cr | Cu | Hg | Pb | Ni | Zn | Cd | Cr | Cu | Hg | Pb | Ni | Zn |
| 23049 | <0.10 | 0.28 | 1.3 | 0.01 | <0.50 | 2.2 | 20 | <0.50 | 1.2 | 5.6 | 0.03 | <2.5 | 9.9 | 90 |
| 23050 | <0.10 | 1.2 | 2.1 | 0.05 | <0.50 | 1.5 | 20 | <0.50 | 5.4 | 9.5 | 0.22 | <2.5 | 6.8 | 95 |
| 23051 | <0.10 | 0.48 | 2.3 | 0.08 | <0.50 | 0.86 | 19 | <0.50 | 2.2 | 10 | 0.34 | <2.5 | 3.9 | 84 |
| 23052 | <0.10 | 0.97 | 1.9 | 0.07 | <0.50 | 0.87 | 20 | <0.50 | 4.4 | 8.8 | 0.32 | <2.5 | 3.9 | 90 |
| 23053 | <0.10 | <0.10 | 0.59 | 0.12 | <0.50 | 1.3 | 5.2 | <0.50 | <0.50 | 3.3 | 0.70 | <2.5 | 1.2 | 29 |
| 23054 | <0.10 | <0.10 | 6.0 | 0.13 | <0.50 | 0.73 | 50 | <0.50 | <0.50 | 32 | 0.68 | <2.5 | 3.9 | 250 |
| 23055 | <0.10 | 1.1 | 1.0 | 0.09 | <0.50 | 1.5 | 15 | <0.50 | 5.1 | 4.7 | 0.39 | <2.5 | 6.8 | 69 |
| 23056 | <0.10 | 0.68 | 0.98 | 0.02 | <0.50 | 0.98 | 21 | <0.50 | 3.0 | 4.3 | 0.10 | <2.5 | 4.3 | 91 |
| 23057 | <0.10 | <0.10 | 0.51 | 0.11 | <0.50 | 0.43 | 4.8 | <0.50 | <0.50 | 2.8 | 0.60 | <2.5 | 2.3 | 26 |
| 23058 | <0.10 | 0.14 | 0.68 | 0.27 | <0.50 | 0.68 | 5.2 | <0.50 | 0.72 | 3.6 | 1.4 | <2.5 | 3.6 | 28 |

[a] Refer to Table J-2 for sample description. Sample 23054 was a female Dungeness crab collected March 18, 1974. The leg flesh was used for heavy metal analysis, but there was insufficient sample for chlorinated hydrocarbon analysis.

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